1. **Executive summary**

The objectives of the FY18 Amalima participant-based survey was to give information on achievements of program agricultural outcomes over the period of October 2017 to September 2018. The survey focused on 18 outcome indicators that are reported at farmer and or household level. CNFA used the information from the survey for management decision making including revising of FY19 indicator targets for the program. The survey results were also used for reporting to Food for Peace (FFP). The survey results are summarized in Annex 1.

The findings of the survey were that:

* 96% (48,591) of trained farmers adopted at least one improved technology or management practice in FY18; with 57,133ha of land put under at least one technology or management practice. 81% (32,926) of trained farmers adopted at least five improved technologies or management practices.
* 58% (29,575) of trained farmers participated in at least one value chain activity. Main value chain activities included value added processing and use of improved agricultural inputs on cattle, goats and horticulture.
* 75% of dryland farmers (27,162) produced a crop combination conducive to preparation of a healthy plate i.e. rich in the four food groups (energy, protein, oils and fats and vitamins and minerals).
* Additional area under small grain cereals (sorghum and millet) amounted to 34,685ha compared to the baseline (2014); with 7,971 households growing improved small grain cereals in FY18. Yields of small grain cereals were however, low, at 0.32 and 0.29 tons/ha for sorghum and millet, respectively, due to low rainfall in the program area.
* Yield of irrigated maize was low at 3.22 tons/ha possibly due to fall army infestation.
* 57% (7,636) of those who bought seed and/or fertilizer for dryland crop production purchased the agricultural inputs early, before the rains.
* Calving rate at 70% was close to the set target (75%). Kidding rate was however low at 105% compared to a set target of 130%. The target was rather ambitious under drought conditions that resulted in lack of browse and grazing for the goats and sheep.
* 45% and 21% of cattle and goats respectively, sold in FY18, were sold in formal markets. This is much lower than the target of 89% and 47% respectively for cattle and goats and reflect challenges of lack of cash and inflexible payment terms in the formal market in FY18.
* Incremental sales and Gross Margins for cattle and goats were positive and favorable in FY18. For horticulture crops, while incremental sales and Gross Margins were positive and favorable, CNFA thinks that there is room for improvement in measuring of area cropped in the tiny garden plots by farmers.

Other areas of improvement include measurement and reporting on weight of calves and lambs at weaning.

1. **Introduction**

Amalima is a 7-year $60,616,306 USAID Food for Peace (FFP) program that started in June 2013 and will end September 2020. The program seeks to improve livelihoods through increased agricultural productivity, income diversification, increased access to markets and strengthened community-managed disaster risk reduction systems. Amalima also seeks to improve household nutrition through improved diets for women and children, improved caring practices for children and improved availability and use of water and sanitation. Amalima is implemented by a consortium of local and international partners led by CNFA, including International Medical Corps (IMC), the Manoff Group, Africare, Dabane Trust and Organization of Rural Associations for Progress (ORAP).

The program’s goal is to improve household security and nutrition. Amalima has three strategic objectives (SOs):

* SO 1: Household access to, and availability of food improved
* SO 2: Community resilience to shocks improved
* SO 3: Nutrition and health among pregnant and lactating women; boys and girls under 2 improved

As of FY18, the program aims to benefit over 60,000 households (or 64 percent of the population) in the districts of Tsholotsho in Matabeleland North province; Bulilima, Mangwe, and Gwanda in Matabeleland South province in Zimbabwe. A combination of capacity building, training and mentoring, food rations, vouchers, cash/food for assets, matching grants and community-based messaging and mobilization strategies were employed to achieve the results. The program which is in 65 wards in the four target districts, aims for comprehensive coverage in target areas and multiple interventions per household.

This is the first formal Participant Based Survey report submitted by CNFA to FFP. The survey follows the development and submission of a Scope of Work (SOW) for Participant Based Surveys in March 2018. Previous beneficiary-based surveys were conducted by CNFA in FY16 and FY17 and used for reporting on adoption of Amalima-promoted agricultural technologies management practices; and on productivity and profitability of promoted agricultural value chains. The data was also used to inform management decision making. CNFA plans to conduct participant-based surveys annually, to enable reporting management decision making.

The primary objective of the FY18 participant-based survey was to assess the status of key FFP and program-specific outcome indicators and to compare the results with the targets for the indicators. The data was also used to estimate FY19 targets for the indicators. Findings of the survey were also used to inform management decision making.

The main audience for the survey was the program team and USAID. The survey findings were used internally by program management to improve programming and decision-making on program interventions. The survey results enabled the program to accurately report achievements to USAID.

The main audience for the survey was the Amalima program and USAID’s Food for Peace (FFP). The survey findings were used internally by program management to improve programming and decision-making on program interventions. The survey results enabled the program to accurately report achievements to FFP.

The report will begin with an overview of the study methods for the FY18 participant-based survey. The findings from the participant-based survey are presented for 18 FFP and program-specific annual outcome indicators. The 18 agriculture and livelihood outcome indicators covered by the participant-based survey are listed in Table 1.

**Table 1: Indicators for FY18 Participant Based Survey**

|  |  |
| --- | --- |
| Indicator number | Indicator |
| 3 | Irrigated maize yields (Grain) (MT/Hectare) |
| 4 | Sorghum yields (MT/Hectare) |
| 5 | Millet yields (MT/Hectare) |
| 6 | Calving rate among project beneficiaries |
| 7 | Kidding rate among project beneficiaries |
| 8 | Average weight of calves and lambs/kids at weaning (Kg) |
| 10. (4.5.2.2) (FFP -15) | Number of hectares under improved technologies or management practices as a result of USG assistance |
| 11. (4.5.2-5) (FFP-9) | Number of farmers and others who have applied new technologies or management practices as a result of USG assistance |
| 13 | Percentage of targeted farmers who used at least five sustainable agriculture (crop/ livestock and/ or NRM) practice/s and/or technologies in the past 12 months |
| 15 | Number of farmers purchasing inputs in advance through agrodealers |
| 21 | Number of HH growing improved small grain cereal crops as a result of USG assistance |
| 22 | Number of hectares under small grain production as a result of USG assistance |
| 23 | Number of producers growing a crop combination rich in energy, fat, protein, vitamin and minerals |
| 29. (FFP-27) | Number of farmers who practiced value chain activities promoted by the project in the past twelve months |
| 31 | Percentage large stock (of participant farmers) sold through formal market systems |
| 32 | Percentage of small stock (of participant farmers) sold through formal market systems |
| 33. (4.5.2-23) (FFP-16) | Value of incremental sales (collected at farm level) attributed to USG implementation |
| 34. (4.5-4) (FFP-8) | Gross margin in production per unit of land, kilogram, or animals of selected product (GM/ha for crops) (GM/animal for livestock) |

1. **Methodology**

**3.1 Study design**

Two surveys were conducted –a household survey and a farmer group survey. For each of the surveys, data was collected twice i.e. in March and in August 2018. The same farmers were interviewed in March and in August. At analysis, data from the March and August surveys was merged and analyzed as one dataset.

The surveys targeted farmers who received agricultural training from FY14 to FY17. The household survey targeted farmers trained in Conservation Agriculture (CA) and/or Livestock Management and the farmer group survey targeted plot holders in gardens and irrigation schemes (trained in irrigated crop production).

The householdsurvey looked at the adoption of livestock and crop technologies and management practices promoted by Amalima. It also looked at incremental sales and gross margins of cattle and goat value chains. The household survey applied a two-stage cluster design and used three indicators for the calculation of sample size.

* FFP 15: Number of hectares under improved technologies or management practices
* FFP 9: Number of farmers who have applied improved technologies or management practices
* FFP 16: Value of incremental sales (livestock).

The selected indicators have three different populations: Farmers trained in conservation agriculture; Farmers trained in livestock management; and farmers trained in livestock and/or conservation agriculture (referred to as general agriculture trainees in Figure 1 below). The first two are wholly contained subsets of the third, which constituted the sampling frame. See Figure 1.

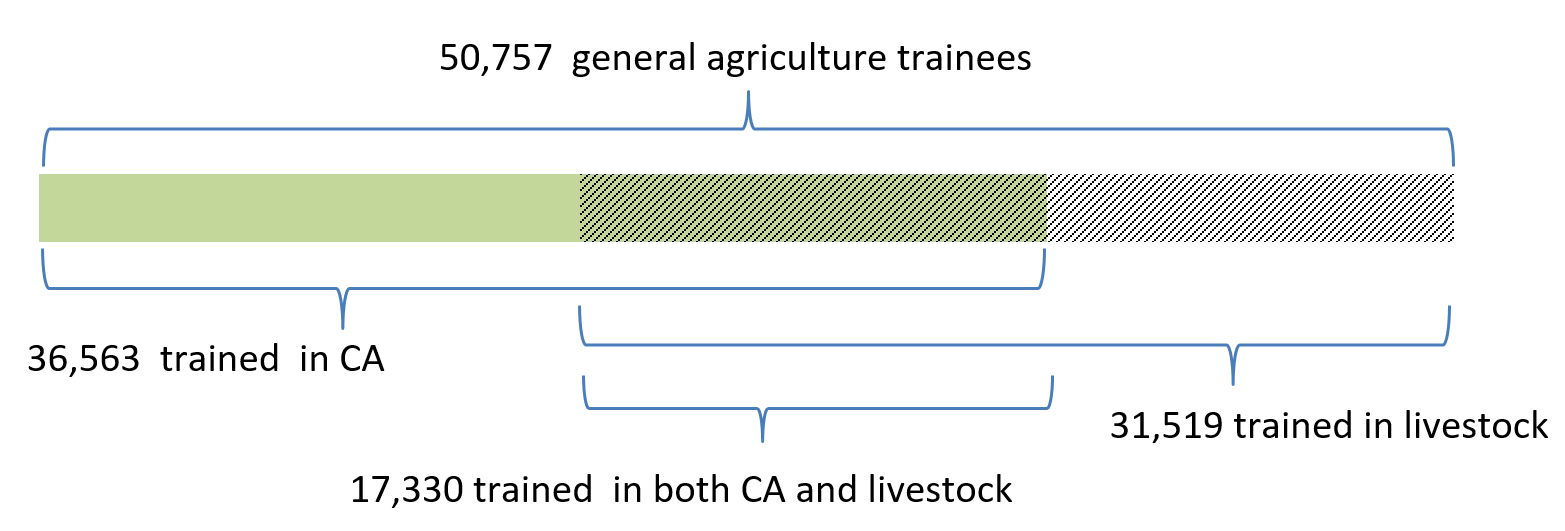


Fig 1: Relationship between CA and Livestock trainees

The farmer group survey gathered data on the value of irrigated crop incremental sales and gross margins. This survey used the incremental sales indicator in the estimation of sample size.

The sampling frame for the farmer group survey included farmers who received training in irrigated crop production and who were active in market gardening. The farmer group approach was used for the irrigation survey.

The population of beneficiaries for the two surveys comprised:

* Farmers trained in CA or livestock management or both: 50,757
* Irrigated crops trainees: 5,000.

These figures came from the master list of project participants in the Amalima Monitoring and Evaluation (M&E) database. These are people who received training (FY14 to FY17) and were expected to adopt improved technologies or management practices promoted by the program in their agricultural production.

3.2 Sample size calculation

The sample size calculation was done following guidelines given in the USAID/Feed the Future Sampling Guide for Beneficiary-Based Surveys (Feb 2016). CNFA used the list of program participants from its M&E database and the approved indicator performance tracking table (FY17 ARR IPTT) with the planned targets for the outcome indicators, to determine the sample size.

CNFA used the formula recommended by the USAID Sampling Guide for the estimation of indicators of totals, for estimating sample sizes:

𝑖𝑛𝑖𝑡𝑖𝑎𝑙 𝑠𝑎𝑚𝑝𝑙𝑒 𝑠𝑖𝑧𝑒 = 𝑛𝑖𝑛𝑖𝑡𝑖𝑎𝑙 = 𝑁2∗𝑧2∗𝑠2

𝑀𝑂𝐸2

Where:

*N* = total number of participant farmers

*z* = critical value from Normal Probability Distribution

*s* = standard deviation of the distribution of participant data

*MOE* = margin of error

*Sample size for household survey*

For the two indicators in the household survey, (number of hectares under improved technologies and value of incremental sales), CNFA used the standard deviation from the 2016 participant-based survey. The recommended standard deviation calculation from the USAID guide for “Number of farmers and others using improved technologies” indicator, was 0.5. A 95% confidence level, a design effect of 2, and a margin of error of 10% was used.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample Size for Household Survey | |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **N** | **max** | **min** | **s** | **p** |  | **MOE** | **z** | **n initial** |  |  |  | **n final** |
| **INDICATOR** | **Population of beneficiaries (N)** | **Estimate of maximum (for s)** | **Estimate of minimum (for s)** | **Standard deviation (s)** | **Acceptable percentage error (for MOE)** | **Target value of indicator (for MOE)** | **Margin of Error (MOE)** | **Critical Value (z)** | **Initial Sample Size** | **Finite Population Correction needed?** | **Design effect** | **Non response rate** | **Final sample size** |
| 1. Number of hectares under improved technologies or management practices | 36,563 |  |  | 1.15 | 10% | 51,962 | 5,196 | 1.96 | 252 | No | 2 | 1.0526316 | 530 |
| 2. Value of incremental sales (goats) | 31,519 |  |  | 22.01 | 10% | 800,000 | 80,000 | 1.96 | 289 | No | 2 | 1.0526316 | 608 |
| 3. Number of farmers who have applied improved technologies or management practices | 50,757 | 1 | 0 | 0.50 | 10% | 35,611 | 3,561 | 1.96 | 195 | No | 2 | 1.0526316 | 411 |

**Table 2: Summary –Sample size calculation for household survey**

From the sample size calculation summarized in Table 2, there were three proposed samples; 530 for CA trained farmers; 608 for farmers trained in livestock management and 411 for all trained farmers. On the ground, because the third sample is an aggregation of the first two, the samples for CA and livestock were combined to constitute the third sample.

*Sample size for irrigation survey*

The sample for farmer groups (irrigated agriculture) was used to measure incremental sales and gross margins for irrigated crops. The incremental sales indicator was used in the estimation of sample size.

From the sample size calculation summarized in Table 3, the final sample size should be fixed at nfinal of 108. Since the calculated sample size is less than 525, a sample size of 525 was adopted for the irrigating groups as per USAID Sampling Guide (2016) which recommends 525 as the minimum sample size.

To determine the number of irrigation groups (m) to be surveyed, the following formula was used:

m = round (n final)/b

Where

m is the number of farmer groups (clusters) to be surveyed.

n final is the sample size from the Value of Incremental Sales Indicator

b is a constant because the irrigation group size is roughly 30.

Replacing the formula (525/30) = 18 farmer groups was selected.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample Size for Household Survey | |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **N** | **max** | **min** | **s** | **p** |  | **MOE** | **z** | **n initial** |  |  |  | **n final** |
| **INDICATOR** | **Population of beneficiaries (N)** | **Estimate of maximum (for s)** | **Estimate of minimum (for s)** | **Standard deviation (s)** | **Acceptable percentage error (for MOE)** | **Target value of indicator (for MOE)** | **Margin of Error (MOE)** | **Critical Value (z)** | **Initial Sample Size** | **Finite Population Correction needed?** | **Design effect** | **Non response rate** | **Final sample size** |
| Value of incremental sales (goats) | 4,037 | 100 | 0 | 16.67 | 10% | 184,138 | 18,414 | 1.96 | 51 | No | 2 | 1.0526316 | 108 |

**Table 3: Summary –Sample size calculation (Irrigation Groups Survey)**

3.3 Sampling frame(s) and coverage for participant-based survey

The FY18 participant-based survey measured indicators for adoption of crop and livestock management practices at the household level. The household survey also measured performance of value chain activities related to livestock. The farmer group survey measured performance of value chain activities for irrigated crops.

Two stage cluster sampling was used to select beneficiaries for the household survey. The first stage sampling involved random selection of 25 clusters (wards) from the 65 Amalima wards. The selection of clusters was based on probability-proportionate-to-size (PPS) method that ensured that larger clusters (in terms of population of CA and livestock trainees) had a higher likelihood of being selected from the sample frame and smaller clusters had a smaller likelihood of being selected. The second stage involved random sampling (systematic random sampling) of 26 farmers from a list of livestock trainees in each of the 25 randomly selected clusters (sample size 650); plus an additional 23 farmers from a list of CA trainees in each of the 25 randomly selected clusters (sample size 575). Complete participant information organized by cluster and by training received, was available in the Amalima M&E database to create the second stage cluster frame.

Farmers selected from the livestock trainees list had a livestock questionnaire administered to them, while those selected from the CA trainees list had a ‘dryland crops’ questionnaire administered to them. Due to close proximity of CA and livestock trainees (farmers living as neighbors within the same village) and significant overlap between them, the survey of CA and livestock trainees was taken as one combined sample survey with one or two questionnaires administered to respondents, depending on whether they were sampled for CA, livestock, or both.

In the case of the irrigation groups, the first stage frame was gardens and irrigation schemes where farmers had received training from Amalima and were engaged in market gardening. For each of the sampled gardens/irrigation schemes, all the farmers that were trained and were involved in market gardening activities were interviewed. Interviews were conducted with individual farmers at the garden or irrigation scheme.

**3.4 Questionnaires**

CNFA used three questionnaires for the survey (sees Annex 3). These are:

* 1. Dryland Crops –Adoption of practices (targeted at CA trainees -March and August)
  2. Livestock –Adoption of practices (targeted at livestock trainees -March and August)
  3. Irrigated crops –Adoption of practices (targeted at horticulture trainees --March and August).

All three questionnaires had been used in previous participant-based surveys and only needed minor updating for the FY18 surveys. The questionnaires were administered using open data kit (ODK) on electronic tablets.

While the questionnaires were completed on the tablets in English, enumerators were given translated hard copies of the questionnaires for reference when interviewing respondents. Use of translated questionnaires was meant to ensure uniformity in asking of questions by all the enumerators.

3.5 Fieldwork operations

CNFA hired enumerators to administer questionnaires using face-to-face interviews at farmer level. The enumerators were hired from the sampled wards and vicinity of sampled gardens, to conduct the survey within the same areas. Local enumerators were easily accepted by the community as they were familiar with the local culture and traditions. They were less likely to be refused an interview or to be given false information. Logistical arrangements for reaching interviewees were much easier with local enumerators since sampled farmers were often within walking distance.

CNFA organized for training of enumerators to take place at district centers over a period of 2 or 3 days. CNFA M&E personnel led the training, beginning with an explanation of survey objectives and sampling design. The training provided a detailed explanation of the questionnaires, question by question. The session included mock interviews among interviewers and discussions of any problems.

Enumerators were given a list of interviewees for their selected ward. This was a sample of trained farmers in that ward. The list for the household survey clearly indicated whether the sampled farmer was to be interviewed on dryland crops, livestock management or both. At the homestead, the enumerator was required to take GPS coordinates, to facilitate any revisit and for enumerator monitoring.

At the selected gardens and irrigation schemes, enumerators interviewed all the trained and active farmers.

Field work started with the Amalima field officer for the ward, introducing the enumerator to community leadership, followed by data collection from village to village. Field work took place over the last two weeks of April 2018 and over the last two weeks of August 2018. CNFA M&E staff monitored the data collection in the field. This involved checking progress of the survey and quality of responses recorded by an enumerator. It included checking adequate completion of all fields, any missing data, advising on areas of correction or re- interviews, where required.

3.6 Data cleaning

There was no requirement for data entry as data was collected in ODK and uploaded in Excel for collation and analysis. Data cleaning involved checking and correcting for duplicate records, checking for data completeness and data validity (e.g. frequency distribution anomalies and out-of-range values) and data consistency.

**3.7 Sampling weights and the treatment of non-response**

CNFA calculated sampling weights for each participant who responded to the survey interview questions. The sample weights for each selected participant were applied to corresponding individual survey data records to inflate the participant data values up to the level of the population of program participants. The sample weights were calculated to account and compensate for

* Probability of selection at each stage of sampling; and
* Non-response at the individual participant level.

1. **Findings**

**4.1 Household Survey Results (all trainees)**

The household survey was completed by 1,028 farmers (825 females, 203 male). 493 questionnaires were CA while 584 were livestock management. Data from the household survey (covering CA, livestock management or both) was used to calculate FFP agricultural indicators for use of sustainable agricultural practices and value chain activities. Application of new technologies or management practices; and practicing value chain activities are practices promoted by the program. Their adoption is expected to directly benefit households and lead to increased food security.

**4.1.1 Number of farmers and others who have applied new technologies or management practices**

The indicator measures direct participant farmers that applied improved technologies or management practices during the reporting year. Improved technologies or management practices promoted by the program include:

* use of crop genetics (i.e. use of improved crop varieties),
* cultural practices (crop rotations, intercropping, mulching, weed control),
* livestock management (improved animal shelters, vaccinations, deworming, castration, dehorning etc),
* pest management (integrated pest management),
* disease management (for crops and livestock),
* soil related fertility and conservation (micro dosing with fertilizer, use of manure and/or compost),
* water management non-irrigation (e.g. use of dead level contours),
* climate adaptation (use of conservation agricultural practices for crops including minimum tillage),
* marketing and distribution,
* post-harvest handling and storage, and
* value added processing.

From the survey, 96 percent (48,591) of trained farmers adopted at least one technology or improved management practice. 81 percent of trained farmers (41,159) adopted at least five sustainable agriculture (crop/livestock/natural resources management) practices and or technologies in FY18.

Figure 2 shows a significant over-achievement on almost all promoted practices except cultural practices, climate adaptation (CA) and marketing and distribution. Marketing and distribution remains challenging in the prevailing unfavorable economic climate. “Post-harvest handling” and “value-added processing” results exceeded target partly because CNFA included animal product handling (milk, eggs, meat) in the survey for the first time in FY18, as these practices were introduced/emphasized in the FY17-18 trainings.

“Climate adaptation” and “cultural practices” (both of which include conservation agriculture practices) adoption rates were lower than set targets and not consistent with field observations. There was a high level of replanting in late January following a dry spell which destroyed much of the early planted crop. Late plantings after the start of the new year generally do not incorporate CA practices like low tillage as farmers plow as quickly as possible to take advantage of the limited remaining rainfall period. It is possible that in responding to the outcome survey in March, farmers may have referenced their crop in the field at the time in their responses rather than considering the practices used in the earlier failed planting. The survey questions that collect data for this indicator will be reworded so that this issue is not repeated in future reporting years.

**4.1.2 Number of farmers who practiced value chain activities promoted by the project**

The indicator measures the total number of farmers that practiced value chain activities promoted by the program. Strong agricultural value chains create livelihoods, increase incomes and promote economic growth. 58.3 percent of farmers (29,575) reported participating in at least one value chain activity. Amalima program promotes value chain activities in horticulture, irrigated maize, cattle and goats. Four value chain stages are considered under this indicator. These include use of improved inputs (e.g. use of quality seeds and fertilizer (for crops) or quality feed and improved breeds (for livestock)), post-harvest handling (e.g. storage and transportation), value added processing (drying, grading, packaging) and marketing/trading (e.g. contract farming, selling through formal markets etc). The most common value chain activities practiced were value added processing of produce (including drying of horticulture and meat products) and use of improved inputs. On improved inputs, farmers mainly bought drought and /or disease tolerant seed varieties from seed houses. On livestock, farmers used bought stock feed from agrodealers. The survey results are shown in figure 3.

Compared to the target (of 2,200), the 29,575 farmers practicing value chain activities promoted by the project in FY18, is significantly higher. The FY18 achievement is however very much in line with the 2016 achievement of 20,961 farmers for the same indicator. This suggests that the 2018 target was unrealistic and should have been revised. Out year targets have been revised to reflect this achievement.

**4.2 Household Survey Results (CA trainees)**

Data from Dryland questionnaires in the household survey was used to analyze the following indicators

* producers growing a crop combination rich in the four food crops that constitute a healthy plate (energy, proteins, vitamins and minerals, oils and fats).
* hectares under improved technologies or management practices
* yields of sorghum and millet
* farmers purchasing inputs in advance through agrodealers
* households growing improved small grain cereal crops; and
* hectares under small grain production.

The Dryland survey questionnaire was completed by 479 farmers. Of these, 473 farmers (402 female, 71 male) planted a crop in FY18. The analysis for the above-listed indicators was based on farmers that planted a crop. Of the 473 farmers who planted, 85 percent were females and 15 percent were male.

**4.2.1 Number of producers growing a crop combination rich in four food groups –energy, fat, protein and vitamin and minerals**

Amalima encourages farmers to maintain a backyard garden where they grow a variety of vegetable crops, over and above their rain fed crops (mainly cereals). The program promotes consumption of nutritious and balanced meals from local sources including home production.

From the survey, the most planted crops were maize, millet, groundnuts, cowpeas, round nuts and sorghum (figure 4). Farmers also reported planting vegetables such as tomatoes, onion, leafy vegetables, butternut and carrots in their gardens.

The indicator counts the number of farmers growing a combination of crops covering all the four nutrition classes. **Energy**-rich crops include maize, millet, sorghum, sweet potatoes and Irish potatoes; **Fat**-rich foods include sunflower and groundnuts; **Protein**-rich foods include round nut, sugar bean, cowpea and groundnut; **Vitamin and mineral**-rich food includes tomato, carrot, onion, green bean, spinach, garlic, okra, pumpkin, butternut, brassicas, indigenous vegetables. The survey found that 75 percent (27,162) of CA trainees grew a crop combination rich in the four food groups. This was against a target of 22,000. Out year targets have been revised to reflect this high achievement.

**4.2.2 Hectares under improved technologies or management practices**

The indicator measures the area (in hectares) of land cultivated using program-promoted improved technology(ies) or management practice(s) in FY18. Adoption of improved technologies or management practices promoted by the program is expected to directly benefit households by leading to increased food security.

The participant-based survey collected information on the following agriculture-related, land-basedtechnologies and innovations

* Crop genetics: e.g., use of improved/certified seed that could be higher-yielding, higher in nutritional content and/or more resilient to climate impacts
* Cultural practices: e.g., cultivation practices such as mulching, rotation, weeding, intercropping etc.
* Pest management: e.g., integrated pest management; application of PERSUAP compliant pesticides
* Soil-related fertility and conservation: e.g., use of fertilizers, compost, manure
* Water management: non-irrigation-based e.g., water harvesting i.e. land area protected by conservation works
* Climate mitigation: e.g., conservation agriculture, use of low- or no-till practices

From the survey, 57,133 hectares of land was under at least one technology at farmer level in the program area in FY18. This figure excludes 1,364 ha under new technologies at group and community level (association applied). The group-level figure was collected through on-going monitoring of the groups.

Figure 5 shows that the most popular technologies in terms of area committed to them were cultural practices (occupying 75% of area under improved technologies), soil related fertility conservation (42%), crop genetics (36%) and climate adaptation (27%). Cultural practices (rotation, intercropping, mulching or weeding) occupied a lot of land because the practices do not require any significant funds outlay while on the other end, climate adaptation (mainly CA basins) and water management, non-irrigation (involving digging of conservation structures such as contour ridges) involved a lot of heavy manual labor and therefore occupied less land.

Compared to set targets, Figure 6 shows that the program significantly overachieved on all the six Amalima-promoted technologies or management practices. Out year targets have been revised in line with the FY18 achievement.

**4.2.2 Small grain production**

The program promotes growing of improved small grains including sorghum and millet. The promotion is through training and demonstrations as well as availing the improved seeds through household asset voucher baskets, albeit for a relatively small proportion of Amalima participants. Small grains are drought tolerant and can withstand low rainfall levels typical of the program area. The indicators for measuring uptake of small grains include increase in the number of households growing improved varieties of small grain cereal crops, increase in area grown to small grain cereal crops, as well as increase in yields of the small grain cereal crops. Increased production of small grains is expected to lead to increased household food security.

*Households growing improved small grains*

The survey found that 7,971 households grew improved small grains. This figure is significantly lower than the FY18 target of 15,500 but is very much in line with the FY17 achievement of 6,019 households for the same indicator. This suggests that the FY18 target was unrealistic, particularly given the cultural practice of using retained seed for small grains and the current economic difficulties in Zimbabwe, which impact both availability of and ability to purchase improved seeds. Out year targets have been revised to reflect this.

*Number of hectares under small grain production*

The indicator on number of hectares under small grain production counts the additional area grown under small grain cereal crops promoted by the program (i.e. sorghum and millet) by trained dryland farmers compared to a baseline (2014) area grown. The survey found additional area grown of 34,685ha which is slightly higher than the target of 27,459ha. Out year targets have been revised to reflect this achievement.

*Yield of small grains*

Adoption of improved varieties of small grains together with good agronomic and post-harvest management practices is planned to lead to increased yields of small grains. The survey however shows that FY18 sorghum and millet yields were low at 0.32 and 0.29tons/hectare respectively, against a target of 0.45 and 0.5 tons/hectar respectively. Both sorghum and millet are rain fed crops. Yields were low due to a poor rainy season in the project area in FY18. This status (low rain fed crop yields) was corroborated by the ZimVAC 2018 report which stated that dryland yields in the project area were down in 2018 compared to 2016 due to poor and erratic rains across the south of the country. Out year targets for the small grain cereals have been decreased in line with FY18 achieved levels.

**4.2.3 Number of farmers purchasing inputs in advance**

The indicator counts the number of farmers reporting advance purchase of agricultural inputs from agro-dealers. Advance purchase of inputs was only analyzed for rain-fed crops and looked at the purchase of seed and fertilizer before the end of October 2016. Purchase of agricultural inputs before the end of October means that the inputs were bought before the rains start in November. Early purchase of inputs allows for early planting with the first effective rains. Early planting with the first effective rains often leads to good yields. The survey found that 7,636 farmers (57 percent of those who purchased seed and/or fertilizer for rain-fed crop production) bought the inputs in advance. This figure was 95 percent of the target.

**4.3 Household Survey Results (Livestock management trainees)**

Data from the livestock management questionnaire in the household survey was used to analyze the following indicators:

* Calving and kidding rate among project beneficiaries
* Average weight of calves and lambs/kids at weaning (kg)
* Value of incremental sales (for cattle and goats)
* Gross Margins (for cattle and goats)

The Livestock survey questionnaire was completed by 563 farmers (432 females, 131 males). Of these, 77 percent were females and 23 percent were male.

**4.3.1 Calving and kidding rates**

Calving rate measures number of calves born over a period of one year as a proportion of the number of breeding cows and heifers in the herd over the same period. Calving rate is a measure of cattle productivity in the program. Trained farmers that apply promoted livestock management practices are expected to realize positive results in the form of good calving rates. Calving rate was analyzed for respondents whose households kept cattle. 325 of the 563 livestock respondents kept cattle in FY18. 75 percent of these were female respondents, while 25 percent were male. Calving rate achieved in FY18 was 0.7 calves per cow, which is close to the set target of 0.75.

Kidding/lambing rate is a measure of goat/sheep productivity in the program. Amalima trains goat and sheep farmers on good livestock management practices with the expectation that they go on to adopt the promoted management practices. Trained farmers that apply promoted goat and sheep management practices are expected to realize positive results in the form of good kidding and lambing rates. Kidding and lambing rate measures number of kids and lambs born over a period of one year as a proportion of the number of breeding goats and ewes in the flock over the same period. Kidding/lambing rate was analyzed for respondents whose households kept goats and/or sheep. 506 of the 563 livestock respondents kept goats and/or sheep in FY18. 77 percent of these respondents were females while 23 percent were male. The kidding/lambing rate for goats/sheep achieved in FY18 was lower than target at 105 percent compared to a target of 130 percent. The lower than planned result may be due to a poor rainfall season in FY18 that affected availability of grazing and browse. Out year targets for kidding rate have been adjusted in line with the FY18 achievement.

**4.3.2 Weight of calves and kids at weaning**

The indicator measures the average weight of calves and lambs/kids at weaning (at eight and four months, respectively) from farmers who have received livestock management training facilitated by Amalima. The indicator measures improved livestock production as a result of applying good management practices. Trained farmers who go on to apply promoted livestock management practices are expected to achieve good weaning weights on their livestock. A calf or kid weaned at a good weight is more likely to thrive than one with a low weaning weight.

On this indicator, CNFA has experienced data collection challenges. Very few farmers report weighing their livestock offspring at weaning, despite encouragement to do so. In the FY18 sample survey, three and two respondents reported weighing their calves and kids, respectively at weaning. It is not a practice which is perceived as having a practical benefit, unlike weighing before marketing. Therefore, the actuals presented for calves and kids’ weight cannot be considered accurate or representative. Amalima plans to encourage paravets (community animal health workers) to encourage weighing at weaning and will explore options other than the participant-based survey for data collection on this indicator, including incorporating data on weaning weights collected by paravets.

The FY18 achieved weaning weights are 87.94 kg and 5.94 kg for calves and kids, respectively. These figures fall short of the target of 115 and 9.5 kg for calves and goats, respectively.

**4.3.3 Percentage large and small stock sold through formal market systems**

The indicators measure proportion of cattle (large livestock) and goats and sheep (small livestock) sold through formal market systems by livestock farmers supported by Amalima. Amalima promotes farming as a business and encourages livestock farmers to target big, formal markets where they can get fair prices when selling their livestock. Formal markets (abattoirs and private/public auctions included) include outlets where there is a competitive bidding process and informed choice by both buyers and sellers.

The survey results showed a below target achievement for both cattle and goats. 45 percent of cattle sold by Amalima participants in FY18 were sold in the formal market against a target of 89 percent. For goats and sheep, the figure was 21 percent against a target of 47 percent. Participation in formal markets in FY18 was hindered by cash shortages and the general economic crisis in the country. While formal markets do utilize additional payment options aside from cash, the flexibility afforded by the informal markets (ability to use South African Rand, bartering, negotiated payment terms, and less taxation) outweighs the benefits of using electronic payments available in formal markets. CNFA suspects that demand on the informal markets has increased as rural people seek livestock as a hedge in a highly uncertain financial climate. As both quantity and value of sales was up compared to targets and FY17 results, CNFA does not see this as a negative result but rather evidence of Amalima sellers adapting to their circumstances and taking advantage of a favorable informal market demand. The out-year targets have been revised in line with this achievement.

**4.3.4 Livestock value of incremental sales**

The indicator on value of incremental sales for livestock looks at the value (in USD) of the total amount of cattle or goats sold by project participants relative to a base year (FY14). It is calculated as the total value of sales of livestock during the reporting year (FY18) minus the total value of sales in the base year. This indicator collects both volume (in metric tons) and value (in US dollars) of purchases of cattle and goats from project participants. Table 4 shows that value of incremental sales for cattle and goats significantly exceeded target. Out year targets have been revised in line with this achievement.

**Table 4: Cattle and goat incremental sales**

|  |  |  |
| --- | --- | --- |
| **Indicator/ Disaggregate** | **FY18 Target** | **FY18 Achievement** |
| Value of incremental sales (collected at farm level) attributed to USG implementation |  |  |
| Cattle | 1,044,013 | 4,044,013 |
| Goats | 77,404 | 631,327 |

**4.3.5 Livestock Gross Margin**

The indicator on Farmers’ Gross Margin (GM) per animal is the difference between the total value of production of cattle or goats and the cost of producing the livestock, divided by the total number of livestock kept. Gross margin per animal is a measure of net income for that livestock. It is the return to family labor and capital. Input costs for livestock include, among other things, stock feed, medicines, herding costs, etc.

**Table 5: Cattle and goat gross margin per animal**

|  |  |  |
| --- | --- | --- |
| **Indicator Disaggregate** | **FY18 Target** | **FY18 Achievement** |
| Farmer's gross margin per animal obtained with USG assistance |  |  |
| Cattle | 341 | 453 |
| Goats | 40 | 47 |

The survey results (Table 5) show that farmers had a positive Gross Margin on the cattle and goats despite the unfavorable rainfall with its negative impact on grazing and water availability. Compared to 2018 targets, both cattle and goat gross margins moderately exceeded target. The out-year targets have been revised in line with this achievement.

**4.4 Farmer Groups Survey (Irrigation trainees)**

Data from the irrigation survey was used to analyze indicators on irrigated maize and horticulture crops. 471 farmers were interviewed using the irrigation questionnaire. 89% (418) of these were female while 11% (53) were male. Indicators analyzed using the irrigation survey include:

* Maize yield
* Value of incremental sales for irrigated maize and horticulture
* Gross Margins for irrigated maize and horticulture

**4.4.1 Maize yield**

The indicator measures irrigated maize output per unit area for irrigation farmers who received irrigated crop training from Amalima. The analysis of irrigated maize yields was based on 216 farmers (81 percent female and 19 percent male) who planted maize in FY18 in the program area.

Irrigated maize yields at 3.22tons per hectare from the survey was low compared to the FY18 target of 7tons per hectare. Irrigated maize yields were significantly impacted by fall army worm (FAW) in Amalima districts. Dense planting and high moisture made FAW infestation far worse for maize in irrigation schemes than for dryland crops. Independent of FAW, the target yield of 7tons per hectare was somewhat unrealistic for the farmers and schemes in which Amalima works, due to the small plot size, remote locations, and low agricultural input levels. Out-year targets have been adjusted in line with this achievement. Amalima is continuing to incorporate FAW management and FAW training materials developed in FY18 into FY19 trainings.

**4.4.2 Value of incremental sales**

The analysis of irrigated maize value of incremental sales was based on 147 farmers (84 percent female and 16 percent male) who sold irrigated maize in the program area. The analysis of horticulture value of incremental sales was based on 339 farmers (93 percent female and 7 percent male) who sold horticulture crops in the program area. The horticulture crops included in the analysis are sugar beans, tomato, leafy vegetables, butternut and carrot.

**Table 6: Value of incremental sales for irrigated crops**

|  |  |  |
| --- | --- | --- |
| **Indicator Disaggregate** | **FY18 Target** | **FY18 Achievement** |
| Farmer's gross margin per hectare, animal or cage obtained with USG assistance |  |  |
| Irrigated maize | 42,359 | -71,613.12 |
| Horticulture | 27,737 | 129,714 |

Results from the survey (Table 6) show that value of incremental sales for horticulture crops exceeded their target, while that for irrigated maize was negative. Incremental sales is a problem indicator in the Amalima context due to the very small plot sizes and low levels of production of individual irrigated crops for thousands of individual smallholder farmers; highly variable levels of consumption versus sales; and the impact of variable seasonal rainfall and poor economic conditions. The problem is compounded by the fact that FY14 results which serve as the baseline, against which current figures are calculated, are unrepresentative of current Amalima participants and data collection methods. Irrigated maize incremental sales were negative, as they have been most years, because per-farmer sales were considerably lower than the FY14 baseline, which consisted of experienced farmers with larger plots in existing irrigation schemes. The current irrigated maize farmers are primarily different from those in FY14, which only make up a small minority of those included in the FY18 results. The FY18 irrigated maize crop was also highly affected by fall army worm. The out-year target for the indicator has been adjusted in line with this achievement.

**4.4.3 Gross Margin**

Gross Margin (GM) is the difference between the total value of irrigated crop and the cost of producing that crop, divided by the total number of hectares under the crop. Gross margin per hectare is a measure of net income for that crop. It is the return to family labor and capital. Input costs for irrigated crops include seed, fertilizer, pesticides, casual labor etc.

**Table 7: Gross Margin Irrigated crops**

|  |  |  |
| --- | --- | --- |
| **Indicator Disaggregate** | **FY18 Target** | **FY18 Achievement** |
| Farmer's gross margin per hectare, animal or cage obtained with USG assistance |  |  |
| Irrigated maize | 10,857 | 3,746 |
| Butternut | 8,754 | 7,217 |
| Tomato | 10,900 | 12,545 |
| Carrots | 9,235 | 19,876 |
| Kale | 14,786 | 16,131 |
| Sugar beans | 1,419 | 2,721 |

The survey results (see Table 7) show that farmers had a positive average Gross Margin on all the irrigated crops promoted by the project. The GM for irrigated maize was significantly lower than projected. This is likely due to infestation of fall army worm that negatively affected production. The program continues to train farmers on fall army warm identification and control including use of environmentally friendly and PERSUAP compliant chemicals to control it. The out-year targets have been revised in line with this achievement.

For horticulture crops (butternut, tomato, carrots, kale and sugar bean) overall gross margin, while positive, may not be highly accurate. Gross margins and yields are problematic to estimate for irrigated crops in the Amalima context because the plot sizes dedicated to individual crops by individual farmers can be extremely small (sometime just a few to a few dozen square meters) and any inaccuracy or difference in interpretation when estimating exact areas is compounded when extrapolating to a per hectare (10,000 m2) basis. To a lesser extent this is also true with extrapolating value and quantity of sales, though land area is inherently more prone to inconsistencies of estimation or measurement. While we continue to refine our measurement and record keeping techniques each year, including introducing production and sales logbooks for farmers, it will never be exact in this context. The out-year targets have been revised based on the FY18 achievement.

**Annex 1:** Amalima Program Indicators, 95% Confidence Intervals and Standard Error

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Indicator** | | **Indicator Value** | **95% CI** | | **Number of Records** | **Weighted Population** | **Standard Error** | **Standard Deviation** |
| Lower | Upper |
| 3 | Irrigated maize production | 109,537 | 56,883 | 162,191 | 147 | 964 | 26,864.183 | 238.91327 |
| 3 | Irrigated maize area | 34 | 16 | 52 | 147 | 964 | 9.044 | 0.08043341 |
| 3 | Irrigated maize yield (Mt/Ha) | 3.22 |  |  | 216 | 1,522 |  |  |
| 4 | Sorghum yield (Mt/Ha) | 0.32 | 0.24 | 0.396 | 323 | 24,104 | 0.05637 | 0.713 |
| 5 | Millet yield (Mt/Ha) | 0.29 | 0.24 | 0.34 | 330 | 25,658 | 0.03581 | 0.46 |
| 6 | Calving rate | 0.7 | 0.63 | 0.77 | 308 | 17,038 | 0.03915 | 0.496 |
| 7 | Kidding/lambing rate | 1.054 | 0.97 | 1.14 | 485 | 27,073 | 0.03958 | 0.627 |
| 8 | Average weight of calves at weaning | 87.94 | 12.12 | 163.76 | 3 | 156 | 10.6144 | 13 |
| 8 | Average weight of kids/lambs at weaning | 5.94 | -19.23 | 31.12 | 2 | 105 | 2.828 | 2.828 |
| 10 | Number of hectares under improved technologies or management practices as a result of USG assistance |  |  |  |  |  |  |  |
| 10 | Crop genetics | 20,334 | 20,026 | 20,642 | 473 | 35,827 | 157.214 | 0.06748338 |
| 10 | Cultural practices | 43,004 |  |  | 473 | 35,827 | 2,430.175 | 1.04314 |
| 10 | Pest Management | 7,573 |  |  | 473 | 35,827 | 1,267.928 | 0.5442514452 |
| 10 | Disease management | 7,573 |  |  | 473 | 35,827 | 1,267.928 | 0.5442514452 |
| 10 | Soil -related fertility and conservation | 23,831 |  |  | 473 | 35,827 | 1,747.534 | 0.75012 |
| 10 | Water management, non-irrigation based | 3,988 |  |  | 473 | 35,827 | 877.984 | 0.37687 |
| 10 | Climate adaptation | 15,483 |  |  | 473 | 35,827 | 1,222.47 | 0.52474 |
| 10 | Total with one or more improved technologies | 57,133 |  |  | 473 | 35,827 | 2,740.091 | 1.17617 |
| 10 | Female | 49,039 |  |  | 402 | 30,503 | 2,566.737 | 1.19299 |
| 10 | Male | 8,094 |  |  | 71 | 5,324 | 963.993 | 1.078823 |
| 11 | Number of farmers and others who have applied new technologies or management practices as a result of USG assistance |  |  |  |  |  |  |  |
| 11 | Producers (farmers) | 48,591 | 47,702 | 49,480 | 1,028 | 50,757 | 453.356 | 0.2025 |
| 11 | Crop genetics | 16,517 | 14,450 | 18,584 | 1,028 | 50,757 | 1,055.696 | 0.4711 |
| 11 | Cultural practices | 20,785 | 18,624 | 22,946 | 1,028 | 50,757 | 1,102.607 | 0.4925 |
| 11 | Livestock management | 25,423 | 23,048 | 27,438 | 1,028 | 50,757 | 1,119.845 | 0.5002 |
| 11 | Pest Management | 23,507 | 21,316 | 25,698 | 1,028 | 50,757 | 1,117.607 | 0.4992 |
| 11 | Disease management | 19,257 | 17,133 | 21,381 | 1,028 | 50,757 | 1,083.577 | 0.484 |
| 11 | Soil -related fertility and conservation | 15,661 | 13,643 | 17,679 | 1,028 | 50,757 | 1,029.846 | 0.46 |
| 11 | Water management, non-irrigation based | 7,384 | 5,847 | 8,921 | 1,028 | 50,757 | 784.026 | 0.3502 |
| 11 | Climate adaptation | 12,100 | 10,227 | 13,973 | 1,028 | 50,757 | 955.742 | 0.4269 |
| 11 | Marketing and distribution | 10,634 | 8,844 | 12,424 | 1,028 | 50,757 | 913.428 | 0.408 |
| 11 | Post-harvest handling & storage | 38,165 | 36,297 | 40,033 | 1,028 | 50,757 | 953.055 | 0.4257 |
| 11 | Value-added processing | 30,049 | 27,895 | 32,203 | 1,028 | 50,757 | 1,099.026 | 0.4909 |
| 11 | Total with one or more improved technology/practice | 48,591 | 47,702 | 49,480 | 1,028 | 50,757 | 453.356 | 0.2025 |
| 11 | Female | 39,132 | 38,349 | 39,915 | 825 | 40,791 | 399.674 | 0.199 |
| 11 | Male | 9,459 | 9,038 | 9,880 | 203 | 9,966 | 214.658 | 0.217 |
| 13 | Number of targeted farmers who used at least five sustainable agriculture (crop/ livestock and/ or NRM) practice(s) and/or technologies in the past 12 months |  |  |  |  |  |  |  |
| 13 | Farmers who used at least 5 sustainable technologies in the past 12 months | 41,159 | 39,456 | 42,862 | 1,028 | 50,757 | 868.65 | 0.388 |
| 13 | Percentage of targeted farmers who used at least 5 sustainable agricultural technologies in the past 12 months | 81% |  |  |  |  |  |  |
| 13 | Female targeted farmers who used at least 5 sustainable agricultural technologies in the past 12 months | 32,926 | 31,383 | 34,469 | 825 | 40,791 | 787.297 | 0.392 |
| 13 | Percentage of female targeted farmers who used at least 5 sustainable agricultural technologies in the past 12 months | 81% |  |  |  |  |  |  |
| 13 | Male targeted farmers who used at least 5 sustainable agricultural technologies in the past 12 months | 8,234 | 7,509 | 8,959 | 203 | 9,966 | 369.964 | 0.374 |
| 13 | Percentage of male targeted farmers who used at least 5 sustainable agricultural technologies in the past 12 months | 83% |  |  |  |  |  |  |
| 15 | Number of farmers purchasing inputs in advance through agrodealers | 7636 | 6,799 | 8,473 | 184 | 13,391 | 427.209 | 0.306 |
| 21 | Number of households growing improved small grain cereal crops as a result of USG assistance | 7,034 | 5,500 | 8,568 | 473 | 35,827 | 782.77 | 0.336 |
| 22 | Number of hectares under small grain production as a result of USG assistance | 37,710 |  |  | 1,028 | 30,791 |  | 0.8472948061 |
| 23 | Number of producers growing a crop combination rich in energy, fat, protein, vitamin and minerals | 27,162 | 25,203 | 29,121 | 479 | 36,318 | 999.721 | 0.426 |
| 23 | Female | 23,508 | 21,716 | 25,300 | 407 | 30,914 | 914.504 | 0.422 |
| 23 | Male | 3,654 | 2,854 | 4,454 | 72 | 5,404 | 408 | 0.453 |
| 29 | Number of farmers who practiced value chain activities promoted by the project in the past twelve months | 29,575 | 26,783 | 32,367 | 612 | 50,757 | 1,424.678 | 0.491 |
| 29 | Female | 23,790 | 21,287 | 26,293 | 492 | 40,791 | 1,144.946 | 0.491 |
| 29 | Male | 5,785 | 4,542 | 7,028 | 120 | 9,966 | 634.296 | 0.493 |
| 29 | Use of improved inputs | 23,590 | 20,402 | 26,778 | 485 | 50,757 | 1,424.678 | 0.499 |
| 29 | Post-harvest handling | 7,247 | 4,455 | 10,039 | 149 | 50,757 | 1,021.358 | 0.352 |
| 29 | Value added processing | 24,717 | 21,873 | 27,561 | 513 | 50,757 | 1,450.792 | 0.5 |
| 29 | Marketing/trading | 5,733 | 3,925 | 7,541 | 117 | 50,757 | 922.704 | 0.318 |
| 31 | Total large stock (of participant farmers) sold | 12,955 | 10,368 | 15,542 | 112 | 6,108 | 1,319.903 | 1.6171 |
| 31 | Total large stock (of participant farmers) sold through formal market systems | 5,831 | 3,282 | 8,380 | 112 | 6,108 | 1,300.64 | 1.5935 |
| 31 | Percent of large stock (of participant farmers) sold through formal market systems | 45% |  |  |  |  |  |  |
| 32 | Total small stock (of participant farmers) sold | 31,982 | 23,361 | 40,603 | 177 | 9,612 | 4,398.404 | 4.3048 |
| 32 | Total small stock (of participant farmers) sold through formal market systems | 6,633 | 0 | 13,667 | 177 | 9,612 | 3,588.672 | 3.5123 |
| 32 | Percent of small stock (of participant farmers) sold through formal market systems | 21% |  |  |  |  |  |  |
| 34 | Gross Margin in production per unit of land, kilogram, or animals of select product (GM/ha for crops) (GM/animal for livestock) |  |  |  |  |  |  |  |
| 34 | Irrigated maize hectares planted (Value chain players) | 34.0 | 16.24 | 51.7 | 147 | 964 | 9.044 | 0.08043341 |
| 34 | Irrigated maize total production (Value chain players) | 109,537 | 56,883 | 162,191 | 147 | 964 | 26,864.183 | 238.91327 |
| 34 | Irrigated maize value of sales (Value chain players) | 19,896 | 14,941 | 24,851 | 147 | 964 | 2,527.931 | 22.48184 |
| 34 | Irrigated maize quantity of sales (Value chain players) | 15,662 | 5,252 | 26,072 | 147 | 964 | 5,311.212 | 47.234607 |
| 34 | Irrigated maize purchased input cost (Value chain players) | 11,886 | 5285 | 18,487 | 147 | 964 | 3,367.843 | 29.95149 |
| 34 | Irrigated maize sellers (Value chain players) | 964 |  |  | 147 | 964 |  | 0 |
| 34 | Butternut hectares planted | 2.58 | 2.047 | 3.11 | 38 | 205 | 0.272 | 0.00577971 |
| 34 | Butternut total production | 38,722 | 19,337 | 58,107 | 38 | 205 | 9,890.071 | 201.2918155 |
| 34 | Butternut value of sales | 6,237 | 3,099 | 9,375 | 38 | 205 | 1,601.086 | 34.0438 |
| 34 | Butternut quantity of sales | 10,446 | 4,080 | 16,812 | 38 | 205 | 3,247.931 | 69.0605 |
| 34 | Butternut purchased input cost | 4,500 | 3,381 | 5,619 | 38 | 205 | 571.144 | 12.1442 |
| 34 | Butternut sellers | 205 |  |  | 38 | 205 |  | 0 |
| 34 | Tomato hectares planted | 21.45 | 11.7 | 31.2 | 380 | 3,310 | 4.974 | 0.55652513 |
| 34 | Tomato total production | 368,084 | 312,010 | 424,158 | 380 | 3,310 | 28,598.872 | 119.1387632 |
| 34 | Tomato value of sales | 125,892 | 105,285 | 146,499 | 380 | 3,310 | 10,513.562 | 43.78231 |
| 34 | Tomato quantity of sales | 165,431 | 140,038 | 190,825 | 380 | 3,310 | 15,661.31 | 65.21941552 |
| 34 | Tomato purchased input cost | 11,702 | 9,924 | 13,480 | 380 | 3,310 | 750.415 | 3,77747 |
| 34 | Tomato sellers | 3,310 |  |  | 380 | 3,310 |  | 0 |
| 34 | Carrot hectares planted | 0.98 | 0.62 | 1.34 | 83 | 611 | 0.1835 | 0.001934484 |
| 34 | Carrot total production | 19,876 | 15,275 | 24,477 | 83 | 611 | 2,347.504 | 24.7508 |
| 34 | Carrot value of sales | 6,534 | 4,266 | 8,802 | 83 | 611 | 1,157.353 | 12.2025 |
| 34 | Carrot quantity of sales | 6,100 | 3,871 | 8,329 | 83 | 611 | 1,137.209 | 11.9901 |
| 34 | Carrot purchased input cost | 985 | 317 | 1,653 | 83 | 611 | 340.880 | 3.59405 |
| 34 | Carrot sellers | 611 |  |  | 83 | 611 |  | 0 |
| 34 | Kale hectares planted | 25.41 | 17.71 | 33.11 | 372 | 3,340 | 3.926 | 1.044507236 |
| 34 | Kale total production | 458,440 | 402,386 | 514,494 | 372 | 3,340 | 28,599 | 116.7774309 |
| 34 | Kale value of sales | 156,683 | 135,881 | 177,485 | 372 | 3,340 | 10,613 | 43.33796 |
| 34 | Kale quantity of sales | 172,056 | 148,524 | 195,588 | 372 | 3,340 | 12,006.313 | 49.0252316 |
| 34 | Kale purchased input cost | 7,594 | 4,338 | 10,850 | 372 | 3,340 | 1,661.348 | 6.783761981 |
| 34 | Kale sellers | 3,340 |  |  | 372 | 3,340 |  | 0 |
| 34 | Sugar bean hectares planted | 5.2 | 3.45 | 6.95 | 17 | 204 | 0.893 | 0.0127588 |
| 34 | Sugar bean production | 9,120 | 6,100 | 12,140 | 17 | 204 | 1,76540.75 | 22.0197 |
| 34 | Sugar bean value of sales | 5,304 | 2,734 | 7,874 | 17 | 204 | 1,311.432 | 18.7424 |
| 34 | Sugar bean quantity of sales | 3,083 | 1,530 | 4,636 | 17 | 204 | 792.384 | 11.3244 |
| 34 | Sugar bean purchased input cost | 1,539 | 691 | 2,387 | 17 | 204 | 432.769 | 6.18494 |
| 34 | Sugar bean sellers | 204 |  |  | 17 | 204 |  | 0 |
| 34 | Cattle number | 89,722 | 69,614 | 109,830 | 112 | 6,108 | 1,665.426 | 12.569 |
| 34 | Cattle total production | 89,722 | 69,614 | 109,830 | 112 | 6,108 | 1,665.426 | 12.569 |
| 34 | Cattle value of sales | 6,049,281 | 4,650,209 | 7,448,353 | 112 | 6,108 | 713,812.333 | 874.5387 |
| 34 | Cattle quantity of sales | 12,955 | 10,368 | 15,542 | 112 | 6,108 | 1,319.821 | 1.617 |
| 34 | Cattle purchased input cost | 1,272,796 | 875,051 | 1,673,541 | 112 | 6,108 | 204,461.854 | 250.49974 |
| 34 | Cattle sellers | 6,108 |  |  | 112 | 6,108 |  | 0 |
| 34 | Goat number | 171,424 | 132,187 | 210,661 | 177 | 9,612 | 20,019.032 | 19.593 |
| 34 | Goats total production | 171,424 | 132,187 | 210,661 | 177 | 9,612 | 20,019.032 | 19.593 |
| 34 | Goats value of sales | 1,545,823 | 1,131,075 | 1,960,571 | 177 | 9,612 | 211,606.263 | 207.103 |
| 34 | Goats quantity of sales | 31,982 | 23,379 | 40,585 | 177 | 9,612 | 4,389.413 | 4.296 |
| 34 | Goats purchased input cost | 272,163 | 82,287 | 462,039 | 177 | 9,612 | 96,875.305 | 94.81367 |
| 34 | Goats sellers | 9,612 |  |  | 177 | 9,612 |  | 0 |

**Annex 2: Questionnaires for the Survey**

**1.1 Dryland Crops –Adoption of Practices Questionnaire (March 2018)**

Date of questionnaire administration (day, month, year) ….………..…………………………………

Name of data recorder ……………………………………………………………………………..…..

Geo-reference of location

Longitude ………………………………… Latitude ………….……………………………

Name of district …………………………………… Ward (number & name) ….………………….…..

Village ……………………..…..……. Name of farmer ……………..…………………………...

Sex of farmer (M/F) ……….…… Farmer’s contact cell number ………………………………….…..

Current Gendered Household Type (Tick appropriate response)

|  |  |  |  |
| --- | --- | --- | --- |
| Household has both male & female adults (Over 18 years) resident (M&F) |  | Household has female adult(s) (over 18 years) & no male adult(s) resident (FNM) |  |
| Household has male adult(s) (over 18 years) and no female adults’ resident (MNF) |  | Resident members of the household are all children (below 18 years) (CNA) |  |

Unique Identifier (Amalima Code) ……………………………………………………………………

1. Value chain activities

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Which of the listed commodities did you produce mainly for the market this year over the period Oct 2017 to now | | For the ticked (√) enterprises, please answer ‘Yes’ or ‘No’ depending on whether you participated in each of the following value chain stages this year over the period Oct 2017 to now | | | |
| Please answer by putting a tick (√) on the market enterprises | | Use of improved inputs (joint purchase of inputs, use of quality seeds, fertilizer; use of feedlots, purchased stock feed etc.) | Post-harvest handling (bulk transporting, storage including pest management) | Value-added processing (sorting, grading, processing (drying, packaging, pen feeding etc.)) | Trading/ marketing (contract farming, selling through formal markets, selling as a group or through association) |
| Green mealies |  |  |  |  |  |
| Sugar beans |  |  |  |  |  |
| Tomatoes |  |  |  |  |  |
| Leafy vegetables |  |  |  |  |  |
| Butternut |  |  |  |  |  |
| Carrots |  |  |  |  |  |
| Cattle |  |  |  |  |  |
| Goats |  |  |  |  |  |
| Sheep |  |  |  |  |  |
| Indigenous chickens |  |  |  |  |  |
| Broilers |  |  |  |  |  |

1. Did you plant the following crops in your field, garden or irrigation this year over the period Oct 2017 to now? Please tick (√) all the crops planted by farmer

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Maize | \_\_ | Sorghum | \_\_ | Millet | \_\_ | Groundnuts | \_\_ | Round nuts | \_\_ | Sunflower | \_\_ | Cowpeas | \_\_ |
| Okra | \_\_ | Sweet  potatoes | \_\_ | Pumpkin | \_\_ | Indigenous vegetables | \_\_ | Sugar beans | \_\_ | Irish potatoes | \_\_ | Garden vegetables[[1]](#footnote-1) | \_\_ |

***Dryland Crops Section***

1. Total area under dryland cropping this year (over the period Oct 2017 to now) ………………(ha)
2. Small grain cereal production

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Crop | Area planted 2017/19 (ha) | Area planted (2016/18) (ha) | Area under improved[[2]](#footnote-2) seeds regardless of source 2017/19 | Area under improved seeds regardless of source 2016/18 |
| Sorghum |  |  |  |  |
| Millet |  |  |  |  |

1. Small grain purchased input cost

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Crop | Give sum of the following expenses for the period October 2017 to now. (State currency) | | | |
| Seed (State currency) | Fertilizer (State currency) | Chemicals (State currency) | Casual labor (e.g. for ploughing, planting, weeding etc.) (State currency) |
| Sorghum |  |  |  |  |
| Millet |  |  |  |  |

1. Advance purchase of dryland crop inputs for the 2018/20 season

|  |  |  |
| --- | --- | --- |
| Input | Did you buy these for the 2018/20 season? (Include any HHAV purchases). Indicate Y/N | If ‘Yes’, state month and year of purchase |
| Dryland crop seeds |  |  |
| Basal fertilizer |  |  |
| Top dressing fertilizer |  |  |

1. Small grain sales

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Crop | Quantity of grain sold over the period Oct 2017 to now (kg) | Value ($) of grain sold over the period Oct 2017 to now | Quantity of grain exchanged/bartered over the period Oct 2017 to now (kg) | Value ($) of grain exchanged/bartered over the period Oct 2017 to now |
| Sorghum |  |  |  |  |
| Millet |  |  |  |  |

8. Technology application during the period October 2017 to now

|  |  |  |  |
| --- | --- | --- | --- |
| a. Technology | b. Did you apply the technology between October 2017 and now? Indicate Yes or No | c. If yes to ‘b’, please state area (in ha) where the technology was applied between October 2017 and now | d. Were you applying the technology before participating in Amalima training? Indicate Yes or No |
| Minimum tillage (basins or ripping) |  |  |  |
| Planting with the first effective rains |  |  |  |
| Manure, compost and/or fertilizer application |  |  |  |
| Mulching |  |  |  |
| Crop rotation |  |  |  |
| Weeding (2 – 3 times) |  |  |  |
| Intercropping |  |  |  |
| Conservation of natural predators |  |  |  |
| Use of green or amber label chemicals in pest management |  |  |  |
| Use of locally available plant and animal products in pest management |  |  |  |
| Use of improved/certified seed (include donations) |  |  |  |
| Planting of early maturing maize varieties |  |  |  |
| Improving infiltration using infiltration pits, dead level contours and vegetation strips |  | ………………………..  State area protected |  |
| Constructing micro catchments around fruit trees |  |  |  |
| Harvesting rainwater from roof tops for watering fruit trees and/or crops |  |  |  |
| Re-directing water flowing along roads onto fruit trees and/or crops |  |  |  |
| Using silt traps to reduce siltation of water bodies |  |  |  |

1. Please state the total dryland crop area under one or more of the technologies discussed in Q8, over the period Oct 2017 to now ……………………………….. (ha)

10a. Did you receive credit from a formal financial institution for your 2017/19 dryland crop production? Y/N ……..……….

|  |  |  |  |
| --- | --- | --- | --- |
| 10b. If yes, state value of dryland credit | ------------------- | 10c. Source of dryland credit | ---------------------------- |

10d. Who contributed most to the decision on accessing the dryland credit? (Circle one response below)

|  |  |  |
| --- | --- | --- |
| 1. self | 2. partner/spouse | 3. self and partner/spouse jointly |
| 4. other household member | 5. self and other household member(s) | 6. partner/spouse and other household member(s) |
| 7. someone (or group of people) outside the household | 8. self and other outside people | 9. partner/spouse and other outside people |
| 10. self, partner/spouse and other outside people |  |  |

**1.1b Dryland Post –Harvest Questionnaire (August/September 2018 )**

Date of questionnaire administration (day, month, year) …….………………………………….………

Name of data recorder …………………………………. …………………………………………….…

Geo-reference of location

Longitude ………………………………… Latitude ………….……………………………

Name of district ……………………………………Ward (number & name) …………………………

Village ……………………..…..……. Name of farmer ……………………………………….…

Sex of farmer (M/F) …………… Farmer’s contact cell number …………………...………………….

**Current Gendered Household Type (Tick appropriate response)**

|  |  |  |  |
| --- | --- | --- | --- |
| Household has both male & female adults (Over 18 years) resident (M&F) |  | Household has female adult(s) (over 18 years) & no male adult(s) resident (FNM) |  |
| Household has male adult(s) (over 18 years) and no female adults’ resident (MNF) |  | Resident members of the household are all children (Below 18 years) (CNA) |  |

Unique Identifier (Amalima code) ………………………………………………………………………

1. **Value chain activities**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Which of the listed commodities did you produce mainly for the market this year over the period April to September 2018 | | For the ticked (√) enterprises, please answer ‘Yes’ or ‘No’ depending on whether you participated in each of the following value chain stages in the past 6 months (April to September 2018) | | | |
| Please answer by putting a tick (√) on the market enterprises | | Use of improved inputs (joint purchase of inputs, use of quality seeds, fertilizer; use of purchased stock feed etc.) | Post-harvest handling (bulk transporting, storage including pest management, aggregation) | Value-added processing (sorting, grading, processing (drying, packaging, pen feeding etc.)) | Trading/ marketing (contract farming, selling through formal markets, selling as a group or through association) |
| Irrigated maize |  |  |  |  |  |
| Sugar beans |  |  |  |  |  |
| Tomatoes |  |  |  |  |  |
| Leafy vegetables |  |  |  |  |  |
| Butternut |  |  |  |  |  |
| Carrots |  |  |  |  |  |
| Cattle |  |  |  |  |  |
| Goats |  |  |  |  |  |
| Sheep |  |  |  |  |  |
| Indigenous chickens |  |  |  |  |  |
| Broilers |  |  |  |  |  |

2a. Do you have access to an irrigation or garden plot? (Y/N) …………………

2b. Which of the following garden or irrigation crops did you grow this year, over the period April to Aug/Sept 2018?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Tomatoes, onion, green leaf vegetable, butternut, carrots, okra | (Y/N) …… | Irish potatoes | (Y/N) …… | Sugar beans | (Y/N) …… |

1. Small grains harvest and sales

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Crop | Harvest in kg (2018) | Quantity (kg) of crop sold between April and Aug/Sept 2018 (including sales of grain from previous harvests | Value ($) of crop sold between April and Aug/Sept 2018 | Quantity (kg) of crop exchanged/ bartered between April and Aug/Sept 2018 | Value ($) of crop exchanged/ bartered between April and Aug/Sept 2018 |
| Sorghum |  |  |  |  |  |
| Pearl Millet |  |  |  |  |  |

1. Adoption of improved technology or management practices on dryland crop production

Post-harvest handling and storage

|  |  |  |
| --- | --- | --- |
| Technology or management practices | Did you use the technology or management practice over the period April to Aug/Sept 2018 (Y/N) | Were you using the technology or management practice before participating in Amalima? (Y/N) |
| Grain storage structure that is raised and sealed |  |  |
| Use of improved transportation |  |  |
| Decay and insect control (indigenous and/ or chemical pest control, hermetic bags etc.) |  |  |
| Temperature and humidity control e.g. use of jute bags, raised and aerated platform |  |  |
| Sorting, grading |  |  |
| Improved quality control technologies and practices –washing, wiping etc. |  |  |

1. Adoption of technology or management practices on dryland crop production

Value-added processing

|  |  |  |
| --- | --- | --- |
| Technology or management practices | Did you use the technology or management practice over the period April to Aug/Sept 2018 | Were you using the technology or management practice before participating in Amalima? (Y/N) |
| Improved packaging practices and materials |  |  |
| Food and chemical safety technologies and practices |  |  |
| Use of Improved preservation technologies and practices e.g. solar drying |  |  |

1. Adoption of technology or management practices on dryland crop production

Marketing and distribution

|  |  |  |
| --- | --- | --- |
| Technology or management practices | Did you use the technology or management practice over the period April to Aug/Sept 2018 | Were you using the technology or management practice before participating in Amalima? (Y/N) |
| Contract farming technologies and practices |  |  |
| Aggregating produce for the market |  |  |
| Improved market information system technologies and practices |  |  |
| Formal markets for produce sale |  |  |

**1.2a Livestock –Adoption of Technologies (March 2018)**

Date of questionnaire administration (day, month, year) ….………..…………………..…………….…

Name of data recorder ……………………………………………………………………………..….…

Geo-reference of location

Longitude ………………………………… Latitude ………….……………………………

Name of district ……………………………… Ward (number & name).………………….………...…

Village ……………………..…..……. Name of farmer …………..………………………………

Sex of farmer (M/F) ……….…… Farmer’s contact cell number ………………..………………….…

**Current Gendered Household Type (Tick appropriate response)**

|  |  |  |  |
| --- | --- | --- | --- |
| Household has both male & female adults (Over 18 years) resident (M&F) |  | Household has female adult(s) (over 18 years) & no male adult(s) resident (FNM) |  |
| Household has male adult(s) (over 18 years) and no female adults’ resident (MNF) |  | Resident members of the household are all children (below 18 years) (CNA) |  |

Unique Identifier (Amalima code) ………………………………………………………………………

1. **Value chain activities**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Which of the listed commodities did you produce mainly for the market this year over the period October 2017 to now | | For the ticked (√) enterprises, please answer ‘Yes’ or ‘No’ depending on whether you participated in each of the following value chain stages in the past 6 months (October 2017 to now) | | | |
| Please answer by putting a tick (√) on the market enterprises | | Use of improved inputs (joint purchase of inputs, use of quality seeds, fertilizer; use of purchased stock feed etc.) | Post-harvest handling (bulk transporting, storage including pest management, aggregation) | Value-added processing (sorting, grading, processing (drying, packaging, pen feeding etc.)) | Trading/ marketing (contract farming, selling through formal markets, selling as a group or through association) |
| Irrigated maize |  |  |  |  |  |
| Sugar beans |  |  |  |  |  |
| Tomatoes |  |  |  |  |  |
| Leafy vegetables |  |  |  |  |  |
| Butternut |  |  |  |  |  |
| Carrots |  |  |  |  |  |
| Cattle |  |  |  |  |  |
| Goats |  |  |  |  |  |
| Sheep |  |  |  |  |  |
| Indigenous chickens |  |  |  |  |  |
| Broilers |  |  |  |  |  |

2a. Do you have access to an irrigation or garden plot? (Y/N) ………………………………………….

2b. Which of the following garden or irrigation crops did you grow this year, over the period Oct 2017 to now?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Tomatoes, onion, green leaf vegetable, butternut, carrots or okra | (Y/N) …… | Irish potatoes | (Y/N) …… | Sugar beans | (Y/N) …… |

1. Livestock numbers at time of survey

|  |  |  |
| --- | --- | --- |
| Type of livestock | Number kept by the household | Number owned by the household |
| Cattle |  |  |
| Goats |  |  |
| Sheep |  |  |
| Indigenous chickens |  |  |
| Broilers |  |  |

1. Livestock births

|  |  |  |
| --- | --- | --- |
| Type of livestock | Number of breeding females | Number of offspring born in the past 6 months, over the period Oct 2017 to now |
| Cattle |  |  |
| Goats |  |  |
| Sheep |  |  |

1. Livestock purchased input cost

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of livestock | What was your expenditure on the following in the past 6 months (Oct 2017 to now) | | | |
| Medicines (state currency) | Stock feed (incl. transport) (state currency) | Transport to market (state currency) | Labour[[3]](#footnote-3)( state currency) |
| Cattle |  |  |  |  |
| Goats & sheep |  |  |  |  |

1. **Weight of calves at weaning**

6a. How many calves were weaned in the past 6 months (Oct 2017 to now) ……………..

6b. Did you weigh the calves weaned over the period Oct 2017 to now? Y/N ………….

6c. How many weaned calves were weighed …………………………

6d. Please give the weight of each of the calves weighed

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Calf 1 | …………… | Calf 2 | …………… | Calf 3 | …………… |
| Calf 4 | …………… | Calf 5 | …………… | Calf 6 | …………… |

1. **Weight of kids and /or lambs at weaning**

7a. How many kids/lambs were weaned in the past 6 months (Oct 2017 to now) ………

7b. Did you weigh the kids/lambs weaned over the period Oct 2017 to now? Y/N ……

7c. How many kids/lambs were weighed …………………………

7d. Please give the weight of each of the kids/lambs weighed

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Kid/lamb 1 | …………… | Kid/lamb 2 | …………… | Kid/lamb 3 | …………… |
| Kid/lamb 4 | …………… | Kid/lamb 5 | …………… | Kid/lamb 6 | …………… |

1. **Livestock sales**

8a. Did your household sell any cattle in the past 6 months? (Oct 2017 to now) Y/N …………

8b. If yes, state the total number of cattle sold by your household in the past 6 months (Oct 2017 to now) ………………..

8c. State the number and value of cattle sold by your household at the various markets in the past 6 months (Oct 2017 to now) in the table below

|  |  |  |
| --- | --- | --- |
| Market | Number of cattle sold | Value of cattle sold (state currency |
| Local sales pens |  |  |
| Abattoirs |  |  |
| [[4]](#footnote-4)Informal markets |  |  |

**Enumerator please note**: *Sum of cattle sold at the 3 markets must equal to the total number of cattle sold in 8b*.

8d. What was the main reason for selling the cattle (Circle all relevant)?

|  |  |  |
| --- | --- | --- |
| 1. School/tertiary fees | 2. Family health related expenses | 3. Buying stock feed |
| 4. Buying livestock medicine | 5. Buying assets (machinery, livestock etc) | 6. Settling debt |
| 7. Financing family function (wedding, funeral etc) | 8. Financing business venture | 9. Other (specify) …………………… |
|  |  |  |

8e. Did your household sell any goats and/or sheep in the past 6 months? (Oct 2017 to now) (Y/N)…………

8f. If yes, state the total number of goats and/or sheep sold by your household in the past 6 months? (Oct 2017 to now) ………………..

8g. State the number and value of goats and/or sheep sold by your household at the various markets in the past 6 months? (Oct 2017 to now) in the table below

|  |  |  |
| --- | --- | --- |
| Market | Number of goats and/or sheep sold | Value of goats and/or sheep sold (state currency) |
| Local sales pens |  |  |
| Abattoirs |  |  |
| Informal markets |  |  |

**Enumerator please note**: *Sum of goats and/or sheep sold at the 3 markets must equal to the total number of goats and/or sheep sold in 8f*.

8h. What was the main reason for selling the goat(s)/sheep (Circle all relevant)?

|  |  |  |
| --- | --- | --- |
| 1. School/tertiary fees | 2. Family health related expenses | 3. buying stock feed |
| 4. Buying livestock medicine | 5. Buying assets (machinery, livestock etc) | 6. Settling debt |
| 7. Financing family function (wedding, funeral etc) | 8. Financing business venture | 9. Other (specify) …………… |
|  |  |  |

1. Adoption of improved technology or management practices on livestock

Livestock husbandry practices

|  |  |  |
| --- | --- | --- |
| Technology | Did you apply the technology this year, over the period Oct 2017 to now? (Y/N) | Were you applying the technology before participating in Amalima training? (Y/N) |
| Use of roofed shelters to house calves, sheep and/or goats |  |  |
| Vaccinating livestock |  |  |
| Dosing cattle |  |  |
| Dosing goats |  |  |
| Dipping cattle (plunge or spray, pour-on, spot dressing) |  |  |
| Dipping goats or sheep (plunge or spray, pour-on, spot dressing) |  |  |
| Castrating cattle |  |  |
| Castrating goats or sheep |  |  |
| Dehorning cattle |  |  |
| Weighing livestock |  |  |
| Use of artificial insemination |  |  |
| Replacing bulls, rams or roosters |  |  |
| Supplementary feeding of cattle |  |  |
| Use of bought stock feed |  |  |

1. Adoption of improved technology or management practices on livestock

Marketing and Distribution

|  |  |  |
| --- | --- | --- |
| Technology or management practices | Did you use the technology or management practice over the period Oct 2017 to now | Were you using the technology or management practice before participating in Amalima? (Y/N) |
| Contract farming technologies and practices |  |  |
| Aggregation of livestock for the market |  |  |
| Improved market information systems, technologies and practices |  |  |
| Formal markets (auction floors and or abattoirs) for livestock sales |  |  |

1. **Adoption of improved post-harvest handling technologies and value-added processing**

|  |  |  |
| --- | --- | --- |
| Technology | Did you apply the technology or management practice this year, over the period Oct 2017 to now? (Y/N) | Were you applying the technology or management practice before participating in Amalima training (Y/N) |
| Storing consumption eggs in a cool dry place |  |  |
| Storing consumption eggs in a reed woven basket |  |  |
| Drying meat (of cattle/goat) in the sun |  |  |
| Storing dried meat in well ventilated container |  |  |
| Storing dried meat in a cool room |  |  |
| Boiling fresh cattle milk to kill germs |  |  |
| Storing boiled milk in a cool place |  |  |
| Pouring fresh milk into a gourd/*igula* through a clean cloth to remove contaminants |  |  |
| Placing the milk in a warm place for at least 3 days to allow for fermentation |  |  |
| Storing the sour milk/*amasi* in clean plastic or metal container without signs of rust |  |  |
| Storing sour milk/*amasi* in a cool place to reduce further fermentation. |  |  |
| Pen fattening livestock |  |  |

12a. Did you receive any credit from a formal financial institution for your livestock activities in the past 6 months (Oct 2017 to now)? Y/N ……..……….

|  |  |  |  |
| --- | --- | --- | --- |
| 12b. If yes, state value of livestock credit | ------------------- | 12c. Source of livestock credit | ---------------------------- |

12d. Who contributed most to the decision on accessing the credit? (Circle one response from the list)

|  |  |  |
| --- | --- | --- |
| 1. self | 2. partner/spouse | 3. self and partner/spouse jointly |
| 4. other household member | 5. self and other household member(s) | 6. partner/spouse and other household member(s) |
| 7. someone (or group of people) outside the household | 8. self and other outside people | 9. partner/spouse and other outside people |
| 10. self, partner/spouse and other outside people |  |  |

**1.2b Livestock –Adoption of Technologies (Aug/Sept 2018)**

Date of questionnaire administration (day, month, year) ….………..…………………..…………….…

Name of data recorder ……………………………………………………………………………..….…

Geo-reference of location

Longitude ………………………………… Latitude ………….……………………………

Name of district ……………………………… Ward (number & name).………………….………...…

Village ……………………..…..……. Name of farmer …………..………………………………

Sex of farmer (M/F) ……….…… Farmer’s contact cell number ………………..………………….…

**Current Gendered Household Type (Tick appropriate response)**

|  |  |  |  |
| --- | --- | --- | --- |
| Household has both male & female adults (Over 18 years) resident (M&F) |  | Household has female adult(s) (over 18 years) & no male adult(s) resident (FNM) |  |
| Household has male adult(s) (over 18 years) and no female adults’ resident (MNF) |  | Resident members of the household are all children (below 18 years) (CNA) |  |

Unique Identifier (Amalima code) ………………………………………………………………………

1. **Value chain activities**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Which of the listed commodities did you produce mainly for the market this year over the period April to September 2018 | | For the ticked (√) enterprises, please answer ‘Yes’ or ‘No’ depending on whether you participated in each of the following value chain stages in the past 6 months (April to September 2018) | | | |
| Please answer by putting a tick (√) on the market enterprises | | Use of improved inputs (joint purchase of inputs, use of quality seeds, fertilizer; use of purchased stock feed etc.) | Post-harvest handling (bulk transporting, storage including pest management, aggregation) | Value-added processing (sorting, grading, processing (drying, packaging, pen feeding etc.)) | Trading/ marketing (contract farming, selling through formal markets, selling as a group or through association) |
| Irrigated maize |  |  |  |  |  |
| Sugar beans |  |  |  |  |  |
| Tomatoes |  |  |  |  |  |
| Leafy vegetables |  |  |  |  |  |
| Butternut |  |  |  |  |  |
| Carrots |  |  |  |  |  |
| Cattle |  |  |  |  |  |
| Goats |  |  |  |  |  |
| Sheep |  |  |  |  |  |
| Indigenous chickens |  |  |  |  |  |
| Broilers |  |  |  |  |  |

2a. Do you have access to an irrigation or garden plot? (Y/N) ………………………………………….

2b. Which of the following garden or irrigation crops did you grow this year, over the period April to Aug/Sept 2018?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Tomatoes, onion, green leaf vegetable, butternut, carrots or okra | (Y/N) …… | Irish potatoes | (Y/N) …… | Sugar beans | (Y/N) …… |

1. Livestock numbers at time of survey

|  |  |  |
| --- | --- | --- |
| Type of livestock | Number kept by the household | Number owned by the household |
| Cattle |  |  |
| Goats |  |  |
| Sheep |  |  |
| Indigenous chickens |  |  |
| Broilers |  |  |

1. Livestock births

|  |  |  |
| --- | --- | --- |
| Type of livestock | Number of breeding females | Number of offspring born in the past 6 months, over the period April to Aug/Sept 2018 |
| Cattle |  |  |
| Goats |  |  |
| Sheep |  |  |

1. Livestock purchased input cost

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of livestock | What was your expenditure on the following in the past 6 months (April to Aug/Sept 2018) | | | |
| Medicines (state currency) | Stock feed (incl. transport) (state currency) | Transport to market (state currency) | Labour[[5]](#footnote-5)( state currency) |
| Cattle |  |  |  |  |
| Goats & sheep |  |  |  |  |

1. **Weight of calves at weaning**

6a. How many calves were weaned in the past 6 months (April to Aug/Sept 2018) ……………..

6b. Did you weigh the calves weaned over the period April to Aug/Sept 2018? Y/N ………….

6c. How many weaned calves were weighed …………………………

6d. Please give the weight of each of the calves weighed

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Calf 1 | …………… | Calf 2 | …………… | Calf 3 | …………… |
| Calf 4 | …………… | Calf 5 | …………… | Calf 6 | …………… |

1. **Weight of kids and /or lambs at weaning**

7a. How many kids/lambs were weaned in the past 6 months (April to Aug/Sept 2018) ………

7b. Did you weigh the kids/lambs weaned over the period April to Aug/Sept 2018? Y/N ……

7c. How many kids/lambs were weighed …………………………

7d. Please give the weight of each of the kids/lambs weighed

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Kid/lamb 1 | …………… | Kid/lamb 2 | …………… | Kid/lamb 3 | …………… |
| Kid/lamb 4 | …………… | Kid/lamb 5 | …………… | Kid/lamb 6 | …………… |

1. **Livestock sales**

8a. Did your household sell any cattle in the past 6 months? (April to Aug/Sept 2018) Y/N …………

8b. If yes, state the total number of cattle sold by your household in the past 6 months (April to Aug/Sept 2018) ………………..

8c. State the number and value of cattle sold by your household at the various markets in the past 6 months (April to Aug/Sept 2018) in the table below

|  |  |  |
| --- | --- | --- |
| Market | Number of cattle sold | Value of cattle sold (state currency |
| Local sales pens |  |  |
| Abattoirs |  |  |
| [[6]](#footnote-6)Informal markets |  |  |

**Enumerator please note**: *Sum of cattle sold at the 3 markets must equal to the total number of cattle sold in 8b*.

8d. What was the main reason for selling the cattle (Circle all relevant)?

|  |  |  |
| --- | --- | --- |
| 1. School/tertiary fees | 2. Family health related expenses | 3. Buying stockfeed |
| 4. Buying livestock medicine | 5. Buying assets (machinery, livestock etc) | 6. Settling debt |
| 7. Financing family function (wedding, funeral etc) | 8. Financing business venture | 9. Other (specify) …………………… |
|  |  |  |

8e. Did your household sell any goats and/or sheep in the past 6 months? (April to Aug/Sept 2018) (Y/N)…………

8f. If yes, state the total number of goats and/or sheep sold by your household in the past 6 months? (April to Aug/Sept 2018) ………………..

8g. State the number and value of goats and/or sheep sold by your household at the various markets in the past 6 months? (April to Aug/Sept 2018) in the table below

|  |  |  |
| --- | --- | --- |
| Market | Number of goats and/or sheep sold | Value of goats and/or sheep sold (state currency) |
| Local sales pens |  |  |
| Abattoirs |  |  |
| Informal markets |  |  |

**Enumerator please note**: *Sum of goats and/or sheep sold at the 3 markets must equal to the total number of goats and/or sheep sold in 8f*.

8h. What was the main reason for selling the goat(s)/sheep (Circle all relevant)?

|  |  |  |
| --- | --- | --- |
| 1. School/tertiary fees | 2. Family health related expenses | 3. buying stock feed |
| 4. Buying livestock medicine | 5. Buying assets (machinery, livestock etc) | 6. Settling debt |
| 7. Financing family function (wedding, funeral etc) | 8. Financing business venture | 9. Other (specify) …………… |
|  |  |  |

1. Adoption of improved technology or management practices on livestock

Livestock husbandry practices

|  |  |  |
| --- | --- | --- |
| Technology | Did you apply the technology this year, over the period April to Aug/Sept 2018? (Y/N) | Were you applying the technology before participating in Amalima training? (Y/N) |
| Use of roofed shelters to house calves, sheep and/or goats |  |  |
| Vaccinating livestock |  |  |
| Dosing cattle |  |  |
| Dosing goats |  |  |
| Dipping cattle (plunge or spray, pour-on, spot dressing) |  |  |
| Dipping goats or sheep (plunge or spray, pour-on, spot dressing) |  |  |
| Castrating cattle |  |  |
| Castrating goats or sheep |  |  |
| Dehorning cattle |  |  |
| Weighing livestock |  |  |
| Use of artificial insemination |  |  |
| Replacing bulls, rams or roosters |  |  |
| Supplementary feeding of cattle |  |  |
| Use of bought stock feed |  |  |

1. Adoption of improved technology or management practices on livestock

Marketing and Distribution

|  |  |  |
| --- | --- | --- |
| Technology or management practices | Did you use the technology or management practice over the period April to Aug/Sept 2018 | Were you using the technology or management practice before participating in Amalima? (Y/N) |
| Contract farming technologies and practices |  |  |
| Aggregation of livestock for the market |  |  |
| Improved market information systems, technologies and practices |  |  |
| Formal markets (auction floors and or abattoirs) for livestock sales |  |  |

1. **Adoption of improved post-harvest handling technologies and value-added processing**

|  |  |  |
| --- | --- | --- |
| Technology | Did you apply the technology or management practice this year, over the period April to Aug/Sept 2018? (Y/N) | Were you applying the technology or management practice before participating in Amalima training (Y/N) |
| Storing consumption eggs in a cool dry place |  |  |
| Storing consumption eggs in a reed woven basket |  |  |
| Drying meat (of cattle/goat) in the sun |  |  |
| Storing dried meat in well ventilated container |  |  |
| Storing dried meat in a cool room |  |  |
| Boiling fresh cattle milk to kill germs |  |  |
| Storing boiled milk in a cool place |  |  |
| Pouring fresh milk into a gourd/*igula* through a clean cloth to remove contaminants |  |  |
| Placing the milk in a warm place for at least 3 days to allow for fermentation |  |  |
| Storing the sour milk/*amasi* in clean plastic or metal container without signs of rust |  |  |
| Storing sour milk/*amasi* in a cool place to reduce further fermentation. |  |  |
| Pen fattening livestock |  |  |

12a. Did you receive any credit from a formal financial institution for your livestock activities in the past 6 months (April to Aug/Sept 2018)? Y/N ……..……….

|  |  |  |  |
| --- | --- | --- | --- |
| 12b. If yes, state value of livestock credit | ------------------- | 12c. Source of livestock credit | ---------------------------- |

12d. Who contributed most to the decision on accessing the credit? (Circle one response from the list)

|  |  |  |
| --- | --- | --- |
| 1. self | 2. partner/spouse | 3. self and partner/spouse jointly |
| 4. other household member | 5. self and other household member(s) | 6. partner/spouse and other household member(s) |
| 7. someone (or group of people) outside the household | 8. self and other outside people | 9. partner/spouse and other outside people |
| 10. self, partner/spouse and other outside people |  |  |

**1.3a Irrigated Crops –Adoption of Practices (March 2018)**

Date of questionnaire administration (day, month, year) ….………..……………..……………………

Name of data recorder ……………………………………………………………………………..……

Geo-reference of location

Longitude ………………………………… Latitude ………….……………………………

Name of district ……………………………… Ward (number & name) ….…….…………….………

Village ……………………..…..…… Name of farmer ……………..……………………………

Sex of farmer (M/F) ……….…… Farmer’s contact cell number ………….……………………….…

**Current Gendered Household Type (Tick appropriate response)**

|  |  |  |  |
| --- | --- | --- | --- |
| Household has both male & female adults (over 18 years) resident (M&F) |  | Household has female adult(s) (over 18 years) & no male adult(s) resident (FNM) |  |
| Household has male adult(s) (over 18 years) and no female adults’ resident (MNF) |  | Resident members of the household are all children (below 18 years) (CNA) |  |

Unique Identifier (Amalima code) ………………………………………………………………………

1. **Value chain activities**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Which of the listed commodities did you produce mainly for the market this year over the period Oct 2017 to now | | For the ticked (√) enterprises, please answer ‘Yes’ or ‘No’ depending on whether you participated in each of the following value chain stages in the past 6 months (Oct 2017 to now) | | | |
| Please answer by putting a tick (√) on the market enterprises | | Use of improved inputs (joint purchase of inputs, use of quality seeds, fertilizer; use of purchased stock feed etc.) | Post-harvest handling (bulk transporting, storage including pest management, aggregation) | Value-added processing (sorting, grading, processing (drying, packaging, pen feeding etc.)) | Trading/ marketing (contract farming, selling through formal markets, selling as a group or through association) |
| Irrigated maize |  |  |  |  |  |
| Sugar beans |  |  |  |  |  |
| Tomatoes |  |  |  |  |  |
| Leafy vegetables |  |  |  |  |  |
| Butternut |  |  |  |  |  |
| Carrots |  |  |  |  |  |
| Cattle |  |  |  |  |  |
| Goats |  |  |  |  |  |
| Sheep |  |  |  |  |  |
| Indigenous chickens |  |  |  |  |  |
| Broilers |  |  |  |  |  |

1. Name of irrigation scheme or garden ………………………………………………………
2. Irrigation/ garden area cropped over the period Oct 2017 to now …………………..
3. Irrigation/ garden crops that reached maturity and were harvested in the past six months (Oct 2017 to now)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Crop | Did you produce [*crop*] during period Oct 2017 to now (Y/N) | Area under [*crop*] during period Oct 2017 to now | Quantity of [*crop*] sold during period Oct 2017 to now | Value of [*crop*] sold during period Oct 2017 to now (state currency) | Quantity of [*crop*] consumed or given to others (Oct 2017 to now) | Quantity of [*crop*] stored period Oct 2017 to now |
| Irrigated maize (fresh) |  | ha | cobs |  | cobs |  |
| Irrigated maize (dry) |  |  | kg |  | kg | kg |
| Tomato |  | ha | kg |  | kg | kg |
| Leafy vegetables |  | ha | kg |  | kg | kg |
| Butternut |  | ha | kg |  | kg | kg |
| Carrots |  | ha | kg |  | kg | kg |
| Sugar beans |  | ha | kg |  | kg | kg |

1. Purchased input cost for irrigation/ garden crops produced in the past six months (Oct 2017 to now)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Crop | Cost of item (state currency) | | | | |
| Seed (state currency) | Fertiliser (state currency) | Chemicals (state currency) | Transport of inputs and/ or produce (state currency) | Casual labour (for planting, weeding, harvesting etc.) (state currency) |
| Irrigated maize |  |  |  |  |  |
| Tomato |  |  |  |  |  |
| Leafy vegetables |  |  |  |  |  |
| Butternut |  |  |  |  |  |
| Carrots |  |  |  |  |  |
| Sugar beans |  |  |  |  |  |

1. Adoption of improved technologies or management practices on irrigation/garden crop

Post-harvest handling and storage

|  |  |  |
| --- | --- | --- |
| Technology or management practice | Did you use the technology or management practice over the period Oct 2017 to now (Y/N) | Were you using the technology or management practice before participating in Amalima? (Y/N) |
| Improved pack house technologies and practices |  |  |
| Improved transportation |  |  |
| Decay and insect control (indigenous and or chemical pest control, hermetic bags etc) |  |  |
| Temperature and humidity control e.g. use of jute bags, raised and aerated platform |  |  |
| Sorting, grading, selection |  |  |
| Improved quality control technologies and practices –washing, wiping etc. |  |  |

1. Adoption of improved technology or management practices on irrigation/garden crop

Value-added processing

|  |  |  |
| --- | --- | --- |
| Technology or management practice | Did you use the technology or management practice over the period Oct 2017 to now | Were you using the technology or management practice before participating in Amalima? (Y/N) |
| Improved packaging practices and materials |  |  |
| Food and chemical safety technologies and practices |  |  |
| Use of improved preservation technologies and practices |  |  |

1. Adoption of improved technology or management practices on irrigation/garden crop

Marketing and distribution

|  |  |  |
| --- | --- | --- |
| Technology or management practices | Did you use the technology or management practice over the period Oct 2017 to now | Were you using the technology or management practice before participating in Amalima? (Y/N) |
| Contract farming technologies and practices |  |  |
| Aggregating produce for the market |  |  |
| Improved market information system technologies and practices |  |  |
| Formal markets for produce sale |  |  |

1. Adoption of improved technology or management practices on irrigation/garden crop

Soil fertility, moisture and pest management

|  |  |  |  |
| --- | --- | --- | --- |
| a. Technology | b. Did you apply the technology in your garden/ in the past six months (Oct 2017 to now) (Y/N) | c. If yes to ‘b’, please state garden/irrigation **area (ha)** under the technology in the past six months | d. Were you applying the technology **before** participating in Amalima? (Y/N) |
| Manure, compost and/or fertilizer |  |  |  |
| Mulching |  |  |  |
| Crop rotation |  |  |  |
| Weed control (2-3 times) |  |  |  |
| Intercropping |  |  |  |
| Conservation of natural predators |  |  |  |
| Use of green or amber label chemicals in pest management |  |  |  |
| Use of locally available plant and animal products in pest management |  |  |  |
| Planting of improved seed |  |  |  |

1. Please state the total area under one or more of the technologies discussed in Q9, over the past 6 months (Oct 2017 to now) …………………………….. ha

11a. Did you receive any credit from a formal financial institution for your irrigation/garden activities this year, over the period Oct 2017 to now? (Y/N) ………………

|  |  |  |  |
| --- | --- | --- | --- |
| 11b. If yes, state value of credit | --------------- | 11c. Source of credit | -------------------- |

11d. Who contributed most to the decision on accessing the credit? (Circle one response from the list below)

|  |  |  |
| --- | --- | --- |
| 1. self | 2. partner/spouse | 3. self and partner/spouse jointly |
| 4. other household member | 5. self and other household member(s) | 6. partner/spouse and other household member(s) |
| 7. someone (or group of people) outside the household | 8. self and other outside people | 9. partner/spouse and other outside people |
| 10. self, partner/spouse and other outside people |  |  |

**1.3b Irrigated Crops –Adoption of Practices (Aug/Sept 2018)**

Date of questionnaire administration (day, month, year) ….………..……………..……………………

Name of data recorder ……………………………………………………………………………..……

Geo-reference of location

Longitude ………………………………… Latitude ………….……………………………

Name of district ……………………………… Ward (number & name) ….…….…………….………

Village ……………………..…..…… Name of farmer ……………..……………………………

Sex of farmer (M/F) ……….…… Farmer’s contact cell number ………….……………………….…

**Current Gendered Household Type (Tick appropriate response)**

|  |  |  |  |
| --- | --- | --- | --- |
| Household has both male & female adults (Over 18 years) resident (M&F) |  | Household has female adult(s) (over 18 years) & no male adult(s) resident (FNM) |  |
| Household has male adult(s) (over 18 years) and no female adults’ resident (MNF) |  | Resident members of the household are all children (below 18 years) (CNA) |  |

Unique Identifier (Amalima code) ………………………………………………………………………

1. **Value chain activities**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Which of the listed commodities did you produce mainly for the market this year over the period April to September 2018 | | For the ticked (√) enterprises, please answer ‘Yes’ or ‘No’ depending on whether you participated in each of the following value chain stages in the past 6 months (April to September 2018) | | | |
| Please answer by putting a tick (√) on the market enterprises | | Use of improved inputs (joint purchase of inputs, use of quality seeds, fertilizer; use of purchased stock feed etc.) | Post-harvest handling (bulk transporting, storage including pest management, aggregation) | Value-added processing (sorting, grading, processing (drying, packaging, pen feeding etc.)) | Trading/ marketing (contract farming, selling through formal markets, selling as a group or through association) |
| Irrigated maize |  |  |  |  |  |
| Sugar beans |  |  |  |  |  |
| Tomatoes |  |  |  |  |  |
| Leafy vegetables |  |  |  |  |  |
| Butternut |  |  |  |  |  |
| Carrots |  |  |  |  |  |
| Cattle |  |  |  |  |  |
| Goats |  |  |  |  |  |
| Sheep |  |  |  |  |  |
| Indigenous chickens |  |  |  |  |  |
| Broilers |  |  |  |  |  |

1. Name of irrigation scheme or garden ………………………………………………………
2. Irrigation/ garden area cropped over the period April to Aug/Sept 2018 …………………..
3. Irrigation/ garden crops that reached maturity and were harvested in the past six months (April to Aug/Sept 2018)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Crop | Did you produce [*crop*] during period April to Aug/Sept 2018 (Y/N) | Area under [*crop*] during period April to Aug/Sept 2018 | Quantity of [*crop*] sold during period April to Aug/Sept 2018 | Value of [*crop*] sold during period April to Aug/Sept 2018 (state currency) | Quantity of [*crop*] consumed or given to others (April to Aug/Sept 2018) | Quantity of [*crop*] stored period April to Aug/Sept 2018 |
| Irrigated maize (fresh) |  | ha | cobs |  | cobs |  |
| Irrigated maize (dry) |  |  | kg |  | kg | kg |
| Tomato |  | ha | kg |  | kg | kg |
| Leafy vegetables |  | ha | kg |  | kg | kg |
| Butternut |  | ha | kg |  | kg | kg |
| Carrots |  | ha | kg |  | kg | kg |
| Sugar beans |  | ha | kg |  | kg | kg |

1. Purchased input cost for irrigation/ garden crops produced in the past six months (April to Aug/Sept 2018)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Crop | Cost of item (state currency) | | | | |
| Seed (state currency) | Fertiliser (state currency) | Chemicals (state currency) | Transport of inputs and/ or produce (state currency) | Casual labour (for planting, weeding, harvesting etc.) (state currency) |
| Irrigated maize |  |  |  |  |  |
| Tomato |  |  |  |  |  |
| Leafy vegetables |  |  |  |  |  |
| Butternut |  |  |  |  |  |
| Carrots |  |  |  |  |  |
| Sugar beans |  |  |  |  |  |

1. Adoption of improved technologies or management practices on irrigation/garden crop

Post-harvest handling and storage

|  |  |  |
| --- | --- | --- |
| Technology or management practice | Did you use the technology or management practice over the period April to Aug/Sept 2018 (Y/N) | Were you using the technology or management practice before participating in Amalima? (Y/N) |
| Improved pack house technologies and practices |  |  |
| Improved transportation |  |  |
| Decay and insect control (indigenous and or chemical pest control, hermetic bags etc) |  |  |
| Temperature and humidity control e.g. use of jute bags, raised and aerated platform |  |  |
| Sorting, grading |  |  |
| Improved quality control technologies and practices –washing, wiping etc. |  |  |

1. Adoption of improved technology or management practices on irrigation/garden crop

Value-added processing

|  |  |  |
| --- | --- | --- |
| Technology or management practice | Did you use the technology or management practice over the period April to Aug/Sept 2018 | Were you using the technology or management practice before participating in Amalima? (Y/N) |
| Improved packaging practices and materials |  |  |
| Food and chemical safety technologies and practices |  |  |
| Use of improved preservation technologies and practices |  |  |

1. Adoption of improved technology or management practices on irrigation/garden crop

Marketing and distribution

|  |  |  |
| --- | --- | --- |
| Technology or management practices | Did you use the technology or management practice over the period April to Aug/Sept 2018 | Were you using the technology or management practice before participating in Amalima? (Y/N) |
| Contract farming technologies and practices |  |  |
| Aggregating produce for the market |  |  |
| Improved market information system technologies and practices |  |  |
| Formal markets for produce sale |  |  |

1. Adoption of improved technology or management practices on irrigation/garden crop

Soil fertility, moisture and pest management

|  |  |  |  |
| --- | --- | --- | --- |
| a. Technology | b. Did you apply the technology in your garden/ in the past six months (April to Aug/Sept 2018) (Y/N) | c. If yes to ‘b’, please state garden/irrigation **area (ha)** under the technology in the past six months | d. Were you applying the technology **before** participating in Amalima? (Y/N) |
| Manure, compost and/or fertiliser |  |  |  |
| Mulching |  |  |  |
| Crop rotation |  |  |  |
| Weed control (2-3 times) |  |  |  |
| Intercropping |  |  |  |
| Conservation of natural predators |  |  |  |
| Use of green or amber label chemicals in pest management |  |  |  |
| Use of locally available plant and animal products in pest management |  |  |  |
| Planting of improved seed |  |  |  |

1. Please state the total area under one or more of the technologies discussed in Q9, over the past 6 months (April to Aug/Sept 2018) …………………………….. ha

11a. Did you receive any credit from a formal financial institution for your irrigation/garden activities this year, over the period April to Aug/Sept 2018? (Y/N) ………………

|  |  |  |  |
| --- | --- | --- | --- |
| 11b. If yes, state value of credit | --------------- | 11c. Source of credit | -------------------- |

11d. Who contributed most to the decision on accessing the credit? (Circle one response from the list below)

|  |  |  |
| --- | --- | --- |
| 1. self | 2. partner/spouse | 3. self and partner/spouse jointly |
| 4. other household member | 5. self and other household member(s) | 6. partner/spouse and other household member(s) |
| 7. someone (or group of people) outside the household | 8. self and other outside people | 9. partner/spouse and other outside people |
| 10. self, partner/spouse and other outside people |  |  |

1. tomato, onion, leafy vegetables, butternut, carrots etc [↑](#footnote-ref-1)
2. Must be max 3rd generation seed [↑](#footnote-ref-2)
3. Enumerator: where the (paid) herd boy tends other livestock and/or does other work at the home, please proportionate his cost to cattle and small livestock, based on time allocated to the enterprise [↑](#footnote-ref-3)
4. Informal sales include sales to private individuals, local butchery, local school, hospital or other institution [↑](#footnote-ref-4)
5. Enumerator: where the (paid) herd boy tends other livestock and/or does other work at the home, please proportionate his cost to cattle and small livestock, based on time allocated to the enterprise [↑](#footnote-ref-5)
6. Informal sales include sales to private individuals, local butchery, local school, hospital or other institution [↑](#footnote-ref-6)