Viable Sweetpotato Technologies in Africa (VISTA) Tanzania project

BASELINE SURVEY REPORT

Baseline survey of orange-fleshed sweet potato knowledge, farming and consumption, and dietary practices among households with children aged 6-59 months in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania

FINAL REPORT

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Table of Contents

Acronyms and Abbreviations

ARI	Agricultural Research Institute
CHWs	Community Health Workers
CIP	International Potato Centre
CSPro	The Census and Survey Processing System
DC	District
DHS	Demographic and Health Survey
FANTA	Food and Nutrition Technical Assistance
FtF[1][2]	Feed the Future
GPS	Global Position System
HFIAS	Household Food Insecurity Access Scale
HH	Household
HKI	Hellen Keller International
IPs	Implementing Partners
IQR	Inter-Quartile Range
OFSP	Orange Fleshed Sweet Potato
PCA	Principal Components Analysis
SES	Socio Economic Status
SP	Sweet Potato
SRI	Sugarcane Research Institute
SSA	Sub-Saharan Africa
SUA	Sokoine University of Agriculture
USAID	The United States Agency for International Development
USG	United States Government
VAD	Vitamin A Deficiency
VISTA	Viable SweetPotato Technologies in Africa
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization
ZOI	Zones of Influence

[1] http://www.feedthefuture.gov/about
[2] http://www.feedthefuture.gov/country/tanzania

Executive Summary

Introduction

Orange-fleshed sweetpotato (OFSP) as a staple food besides providing necessary body energy in human diet provides significant amounts of Vitamin A addressing both Vitamin A deficiency (VAD) and body energy needs. The Viable Sweetpotato Technologies in Africa (VISTA) – Tanzania project is designed to expand the production and utilization of nutritious OFSP into seven districts in Mbeya, Iringa and Morogoro regions which are part of USAID's Feed the Future (FTF) zones of influence (ZOI). As part of initial project activities, a baseline survey was implemented to provide a better understanding of the prevailing OFSP knowledge, farming and consumption and dietary practices of caregivers of households with children aged between 6 and 59 months in the project intervention districts. This will provide up-to-date data on key indicators to better understand the context and to be able to use these as a basis for progress monitoring over the three year project period.

Materials and Methods

This community-based cross-sectional survey was conducted between October and November 2015 on a sample of 549 households with children 6-59 months old. The total period planned for the survey was seven months, broken down into preparatory work [protocol development, development of survey instruments, training, questionnaire piloting, village and household listing (August – September 2015)], data collection and entry (October-November 2015), and data cleaning, analysis and reporting (December 2015 -February 2016). The expected results include proportion of households producing and consuming OFSP, as well as dietary practices prevailing in the selected farmer households that will be included in the project's intervention areas.

Key Findings

The baseline survey was done to record and benchmark information on OFSP knowledge, farming and consumption and dietary practices among households with children aged 6-59 months in Gairo and Ulanga DCs in Morogoro region, Iringa and Mbozi DCs in Iringa region and Wanging'ombe, Mbozi and Chunya DCs in Mbeya region. The detailed findings are extensively reported in chapter three of this report.

In summary, the median age of caregivers (including 12 men) from participating households was 30 years [Inter-Quartile Range (IQR): 24 – 37] and most were in monogamous relationships. The median number of persons living in households was 3 (IQR: 2 – 5) with majority of the household members reporting agriculture as the principal activity (89%) and around 45% engaging in sweet potato (SP) farming. Illiteracy was high among these households with about 88% of the participants either never attended school or had primary school education.

The wealth index, a composite measure of a household's cumulative living standard, was modest in this population with about 33% categorized as “poor”. There were however, large differences across districts; Ulanga district had 43% of the participants being “poor” while only 16% were reported as “poor” in Wanging’ombe district. Household food security assessed using the FANTA Household Food Insecurity Assessment Scale (HFIAS) was also modest (34%) with differences observed across districts. Morogoro region represented by Gairo and Ulanga districts were the most food insecure areas with a high HFIAS score of 53% and 36% respectively.

Caregiver knowledge on nutrition in general and vitamin A in particular was poor among the participants. Overall, only about 20% had adequate knowledge on Vitamin A with most common sources of Vitamin A knowledge being health units, schools and community health workers (CHWs).

There were very low consumption of vitamin A rich foods by caregivers and children 6-59 months. The overall consumption of vitamin A rich foods for households at recommended six days a week was 16%. The consumption of OFSP that has high Vitamin A content among the households was very low, reported in 0.4% of the households.

Approximately 4 acres of land per household was cultivated during the 2014/2015 cropping seasons. The most produced crops during that season were maize (31%); beans (18%); and sweetpotato (17%) although these varied across the districts. Of the 4 acres under cultivation, sweetpotato production covered 0.6 acres (IQR: 0.3 – 1.0) and was mainly dominated by white-fleshed (73%), and yellow-fleshed varieties (26%). The orange-fleshed variety (OFSP) was grown by 0.8% of the participants.

The source of sweetpotato planting material among respondents was predominantly home-based where 91% of the participants produced their own planting materials. The remaining households obtained their sweetpotato planting materials from neighbours and relatives. Commercialization in sweetpotato seeds was lacking because 71% of the participants received vines for free for planting with only 29% buying sweetpotato planting material from other sources.

Conclusion

These findings indicate that poverty and household food insecurity are major problems across intervention districts. Lack of knowledge on nutrition in general and vitamin A in particular together with low consumption of foods rich in vitamin A present other challenges that may lead to poor dietary habits. These results form the basis for planning and implementing sustainable community-based intervention project to promote good agricultural and nutritional practices in the VISTA FtF ZOI. Given the important role of agriculture as the main source of both food and income for the rural poor in Tanzania, nutrition-sensitive agricultural development as a multi-sectoral approach holds potential for addressing these problems. Undertaking all the proposed VISTA activities of integrating nutrition into agricultural interventions targeting the different and varied

intervention districts is a big challenge. A participatory approach must be followed and interventions prioritized and implemented into phases to ensure they meet the community priorities and needs, as well as for sustainability purposes. Community approval and participation must be ensured for successful implementation of all the project's proposed activities.

1.0 Introduction

1.1 Background

Vitamin A deficiency (VAD) contributes significantly to human blindness, reduced disease immunity and premature death in Sub-Saharan Africa (SSA). Young children and pregnant or lactating women are particularly at risk of VAD [1, 2]. In Tanzania, more than one-third (33%) of children 6-59 months of age and 37% of women aged 15-49 years are estimated to be Vitamin A deficient [3]. Pregnant women have a higher prevalence of VAD (39%) and the VAD prevalence among women is higher in urban areas than in rural areas (40% and 36% respectively). According to the 2010 Tanzania Health and Demographic Survey [3], the prevalence of stunting, underweight and wasting among children aged 0-59 months is 42%, 16% and 3.8% respectively [3]. Given the important role of agriculture as the main source of both food and income for the rural poor in Tanzania, nutrition-sensitive agricultural development as a multi-sectoral approach holds potential for contributing to addressing child malnutrition. This highlights the need to integrate nutrition promotion into agricultural interventions targeting different population groups. Food-based efforts are highly complementary to other approaches in tackling VAD (capsule supplementation, fortification), especially for rural communities where alternative interventions have greater difficulty to consistently reach beneficiary population in timely manner. Orange-fleshed sweetpotato (OFSP) varieties with high Vitamin A content stand out as a proven and cost effective tool to reduce VAD and provide additional vital nutrients to vulnerable populations. The efficacy of OFSP to combat VAD is based on the high concentration of pro-Vitamin A in roots and leaves with high levels of bio-accessibility through local diets. This nutritional benefit of OFSP can be exploited by integrating sweetpotato cultivation with nutrition education and counselling and advocacy for farmers, communities, agricultural extension experts and policy makers to appreciate and recognize the importance of OFSP to improve human nutrition especially early in life. This may require special intervention to bring together various actors and stakeholders in agricultural production and nutrition to coordinate promoting production and utilization of OFSP as a tool for combating VAD besides improving food security.

The Viable Sweetpotato Technologies in Africa (VISTA) Tanzania project is a three-year initiative executed by the International Potato Center (CIP) and its partners in Tanzania designed to expand the production and utilization of nutritious OFSP into seven districts in Mbeya, Iringa and Morogoro regions which form part of USAID's Feed the Future (FtF) zones of influence (ZOI). The project is funded by the USAID mission in Tanzania.

Tanzania has been designated as a priority country for the United States Government's (USG) FtF initiative. The initiative supports growth of the agricultural sector and promotes good nutrition to attain its key goal, "to sustainably reduce global hunger and poverty by tackling their root causes and employing proven strategies for achieving large scale and lasting impact."

The overall goal of VISTA Tanzania is to contribute to improved dietary diversity, food security and incomes in Tanzania, especially among households with children under five years of age. The project purpose is to extend the production, consumption and marketing of OFSP products among smallholder farmers in seven districts within the FtF zones of influence. VISTA Tanzania is implemented in partnership with the Sugarcane Research Institute (SRI) in Kibaha, Agricultural Research Institute (ARI) Uyole, Sokoine University of Agriculture (SUA), seven local government district offices for agriculture and health, private sector and the media.

1.2 Baseline Survey Aim and Objectives

The main aim of the survey is to generate information which is to be used as a baseline before major project interventions are commenced. The findings from this study will be used to measure progress and possible impact of the project over a three year period.

Specific study objectives

1. To assess the knowledge on sweetpotato and OFSP production and farming practices among households with children 6-59 months old;
2. To estimate caregiver knowledge on Vitamin A and Vitamin A rich foods including OFSP among households with children 6-59 months old;
3. To determine the contribution of OFSP to improved Vitamin A intake among households with children 6-59 months old;
4. To estimate the consumption of OFSP and other Vitamin A rich foods by caregivers and children aged 6-59 months old.

The baseline survey will provide up-to-date data on key project indicators to better understand the context and to be able to use these as a basis for progress monitoring over the three year project implementation period.

1.3 Justification of the Survey

The International Potato Center (CIP) has included as one of its six strategic objectives the need to scale up the benefits of OFSP to reduce VAD in Africa. For Tanzania, VISTA will be a major tool in this expansion effort, and aims to bring the benefits of sweetpotato to at least 21,000 direct beneficiaries in seven districts in Tanzania between October 2014 and September 2017. VISTA Tanzania will use an integrated agriculture-nutrition-marketing strategy to scale-out (and scale-up) proven technologies and delivery approaches designed to accelerate farmer uptake of OFSP varieties, and their effective use for nutrition and income.

VISTA Tanzania will contribute to achieving USAID Tanzania's target of reaching 80% of children under five and women of reproductive age in the Zone of Influence, by focusing on improving dietary quality and diversity.

The baseline survey was aimed at assessing and creating more understanding on the production and consumption of OFSP, as well as dietary practices prevailing in the selected farmer households that will be included in the project's intervention areas. It will also provide up-to-date data on key indicators to better understand the context and to be able to use these as a basis for progress monitoring over the project period.

2.0 Methods

2.1 Study Site

This community-based cross-sectional survey was conducted between October to November 2015 in all the seven districts currently targeted by the VISTA Tanzania project. The districts are Gairo and Ulanga in Morogoro region; Mufindi and Iringa districts in Iringa region and; Wanging'ombe, Chunya and Mbozi districts in Mbeya region. Enumeration of villages was done in September 2015 in preparation for selection of sample villages and households for the survey. Farming is the main economic activity in the three regions. The regions are in the eastern (Morogoro) and southern highlands (Iringa and Mbeya) zones and receive the highest average annual rainfall country-wide and are homes to some water bodies, which are used for small-scale irrigation. Maize, cassava, rice, potato and sweetpotato are the main crops grown. Dairy farming is widely practiced, as well as poultry farming. Sweetpotato production is mainly for home consumption prepared by boiling, roasting and deep-frying of the roots. The leaves are used as a vegetable and are marketed. There is no data on the proportion of households consuming OFSP, but it is likely important; in the Lake Zone region the proportion of households consuming OFSP at least once in a week is about 2% [4].

2.2 Study Population

The study targeted households with children less than 5 years old (6-59 months old). Caretakers of the children were the primary respondents. There were no known risks to these populations beyond inconvenience caused from the targeted behaviours of the intervention (increased OFSP knowledge, production and consumption) or the survey procedures.

2.3 Sample size

Assumptions were made on expected proportions of household weekly frequency of OFSP consumption at baseline and expected changes according to data on surveys that took place in Lake Zone regions of Tanzania[4] and in western Kenya [5, 6]. The sample size calculation is made to allow for comparison of proportions between endline versus baseline surveys, using the equation below [7].

$$n = DEFF \times \frac{\left[Z_{\alpha/2}\sqrt{2\bar{p}\bar{q}} - Z_{1-\beta}\sqrt{p_1q_1 + p_2q_2}\right]^2}{(p_1 - p_2)^2}$$

where

$\bar{p} = \frac{p_1 + p_2}{2}$ and $\bar{q} = 1 - \bar{p}$ when sample sizes are to be equal

$q_1 = 1 - p_1$

$q_2 = 1 - p_2$

$Z_{\alpha/2}$ is the Z-value for the level of significance

$Z_{1-\beta}$ is the Z-value for the Power

Based on an alpha error of 5% and power of 90%, the current best estimates of samples size for the primary outcome of household weekly frequency of OFSP consumption was 426 for the 3 project regions. This sample size was distributed proportionately among the seven project intervention districts using probability proportion to size sampling technique. This sample size allowed comparisons for OFSP knowledge, growing practices and consumption, and dietary practices among households from baseline to endline. The sample size was therefore raised to 512 households to account for a 20% non-response.

The baseline survey was conducted in the seven target districts of VISTA Tanzania project, namely: Gairo, Ulanga, Mufindi, Iringa, Waging'ombe, Chunya and Mbozi districts. Each district has unique characteristics such as sweetpotato production as well as potential for expansion of OFSP production. However, malnutrition is a common feature among all the target districts. Additionally, all the districts fall within USAID FtF's ZOI, and were thus purposively selected for the survey.

The survey used a multi-stage cluster sampling design to select the study respondents. The first stage involved selecting sample points ("clusters") using "probability proportionate-to-size" cluster sampling based on the list of villages from each of the project intervention districts [8]. Thus, 50 villages were randomly selected from the total number of villages in the districts.

A list of all the households that met the VISTA Tanzania project target intervention criteria (farm households with children 6-59 months old) were compiled with the help of village agriculture extension officers. In each of the selected villages, 11 households that fulfilled the project intervention criterion were randomly selected for individual interviews. Thus, a total of 550 households were earmarked for interview for the baseline survey. Here, a household is defined as a person or a group of persons, related or unrelated, who live together and who share a common source of food. In each household, prime caretakers of the children were the primary respondents.

2.4 Recruitment of Eligible Participants

Eligible participants were identified through a listing exercise in which trained enumerators together with village guides went from house to house identifying households with children aged between 6 and 59 months. Global Position System (GPS) coordinates of all eligible households were taken and these were included in the sample frame for random selection of the eventual respondents.

2.5 Survey Development

2.5.1 Types of data

During the listing stage, in each village, a village leader was interviewed to gather information on the village access to services like agricultural extension services, market and health services and information on other agricultural or health interventions serving their community.

During the community based survey, in each eligible household, the household head, mothers or primary caretakers of children aged 6-59 months were interviewed using a standardized questionnaire. The interviews were conducted by trained enumerators in each household and responses recorded directly on the paper-based questionnaire.

The structured questionnaire used for this baseline survey is given at Appendix I. It was prepared by the VISTA staff in collaboration with project implementing partners (IPs), reviewed for accuracy, completeness, translated into Swahili and pre-tested before administering in the field. Based on the pre-test results, the questionnaire was accordingly modified and finalized upon consultation with the IPs. The questionnaire contained 12 modules, with questions in each module intended to capture different information on knowledge, attitude and practices among the target population with regard to sweetpotato in general and OFSP in particular. More specifically, the modules of the questionnaire were:

- Module A - Household Contact Information
- Module B - Household Characteristics: The characteristics of households (number of members, assets); household head (age, education, employment) mother (age, relationship to household head, marital status, education, employment, parity) and children (age, sex).
- Module C - Household Food Security and Dietary Diversity. Household food security assessed using the FANTA Household Food Insecurity Assessment Scale (HFIAS) which has been previously validated in this context[9]. Dietary diversity of the household and caregivers utilized a questionnaire combining the HKI food frequency module informing on the frequency of Vitamin A rich food consumption [10] and the WHO 24 hours recall method that focuses on dietary diversity and acceptable diet [11].

- Module D - Nutrition knowledge, attitudes and practices: sought the mother's or caregivers' knowledge on nutrition and Vitamin A including OFSP and other Vitamin A rich foods.
- Module E - Agriculture: Sought information on agricultural production, use of agricultural products and income derived from agriculture, including OFSP and knowledge and attitudes about sweetpotato agronomy.

2.5.2 Socio-economic data

At enrolment for each respondent, data were collected on basic socio-demographic characteristics such as age, marital status, education, occupation, and household size and composition. Data on agricultural resources and household assets were also collected to provide a context for understanding the overall results of this research.

2.6 Data Collection, Preparation and Fieldwork

2.6.1 Recruitment and training of field workers

VISTA Tanzania project team and the local government IPs collaborated to recruit and train 24 persons as field enumerators for the survey. The recruitment criteria encompassed education, fluency in English and Kiswahili and computer literacy. The enumerators were trained for 6 days from October 12 to October 17, 2015. The training curriculum included: 1) the ethics of research for confidentiality and obtaining voluntary informed consent; 2) discussion of the protocol; 3) discussion of the relevant cultural contexts for data collection; 4) role play as field respondent and enumerator; 5) review of study instruments and informed consent procedures; and 6) survey tool pre-testing the data collection and process in one district of Morogoro region. The enumerators were taken through paper versions of the survey instruments and conducting a comprehension test to determine their competency to perform successfully as enumerators in field conditions. Finally, enumerators were trained in using the Garmin Etrex 10® GPS equipment to record Global Positioning System (GPS) coordinates of all surveyed households.

Specialized training was also provided to data entry clerks shortly before the household survey commenced to minimize loss of skill and ensure that data entry starts as soon the survey in the first districts is completed. The training focused on use of CSPro package; features, functions, capabilities, hardware and software requirements, tutorials and applications to data entry.

2.6.2 Pre-testing

Part of the training of the enumerators involved participation in a pre-testing survey, in selected villages in suburbs of Morogoro Municipality, which were not any of the selected project intervention villages. The enumerators provided feedback from the pre-test. The aim of the pre-test was to train the enumerators in

field techniques using real field conditions, to identify redundant or complex questions and to have first-hand experience of the potential field-based difficulties that they may face.

2.6.3 Information and sensitization of selected communities

A pre-survey sensitization visit to the selected villages was conducted to

- inform and sensitize the community on the survey objectives and procedures;
- List all households in the catchment area villages to identify survey-eligible participants;
- Identify local assistants as guides for the enumerators and mobilization of the selected household members and;
- Prepare travel and lodging logistics for the survey teams.

2.6.4 Team composition and fieldwork

There were three teams of fieldworkers during the data collection phase of the survey, representing the 3 regions; Morogoro, Iringa, and Mbeya. Each team comprised of seven enumerators, a team leader among enumerators and a CIP staff as supervisor.

The team leader had the overall responsibility for visiting teams in the field, ensuring that households are selected properly and ensuring the adequate survey tools or questionnaires and other logistics are available. The supervisor was also responsible for deciding how to overcome unexpected problems. Each problem encountered and decision made was promptly recorded and included in the supervision report. The team leaders each evening organized a wrap-up session with the team to discuss any problems encountered during the day and reviewed all questions and tracking forms to ensure accuracy and completeness The VISTA Tanzania project M&E Specialist was responsible for the overall coordination of the survey with backstopping from the VISTA Tanzania principal investigator and project manager.

2.6.5 Interviews

The interview of each caretaker of the eligible and selected HH took approximately 45 to 60 minutes and questions were asked in Kiswahili language. Interviews were administered in participants' homes after she/he was reminded of the informed consent, initially obtained during the household listing exercise.

At the end of each day, the team leader with assistance from supervisor within each team reviewed the completed questionnaires and discussed questions and concerns about the day's interviews. Issues were addressed using field notes and if necessary, interviewers would return to HHs for clarification.

2.7 Informed Consent

The household head as well as women in the household were informed on the purpose and procedures of the survey, risk and constraints due to participation, confidentiality of the personal data, possibility to refuse the consent, refusal to answer questions or refuse to answer any question without having to justify it. During the listing exercise, enumerators obtained a written informed consent from the household head and women, with parental or guardian assent for the child, before including the household the survey.

2.8 Data entry and cleaning

The baseline survey was conducted under a common goal for each village and household sampled in the districts with the intention of pooling the data for analysis. Every effort was made to ensure consistency in survey execution at every household. All the survey data was combined for all the sampled villages and households through a centralised database management system.

The Census and Survey Processing System (CSpro) was used to create screens for data entry and verification for high accuracy data capture and management. Double data entry was implemented using the "verify" module of the CSpro data management system. After entry, reports were generated using Stata version 13.1 (StataCorp, College Station, TX) for basic logic, range, and missing data checks. After all the data had been entered and cleaned, it was locked for analysis.

2.9 Data analysis

Data were transferred from CSPro and analysed using Stata version 13.1. A Bayesian approach to statistical analysis was used in this baseline survey - for both the primary and secondary data analyses - since there were no specific hypotheses to be tested which required use of multivariate statistics. Summary tables (descriptive statistics and/or frequency tables) were provided for all baseline variables as appropriate. Continuous variables were summarized with descriptive statistics (n, median, and inter-quartile range (IQR)). Frequency counts and percentage of subjects within each category were provided for categorical data.

2.10 Created Indices and scores for analysis

2.10.1 Wealth index

The wealth index is a composite measure of a household's cumulative living standard using the socio-economic status (SES) concept usually incorporating physical resources, social resources, and status within a social hierarchy. It is important to measure SES because it is likely to confound many relationships we tend to investigate. The traditional way of measuring SES is through estimation of income, or consumption expenditure based on the assumptions that material living standards determine well-being. Consumption expenditure data are preferred to income data because they are less variable. In low-income countries in

Sub- Saharan Africa (SSA), measurement of consumption expenditure can be difficult as it is based on recall data and respondents may not remember accurately or they may be reluctant to divulge information. Prices usually fluctuate across time and geographic areas, necessitating complex adjustment of expenditure figures to reflect these price differences. Furthermore, collecting consumption expenditure data requires lengthy questionnaires that must be completed by skilled and trained interviewers and are very expensive. We therefore decided to use an asset-based approach to measure SES. This is an approach that has been used by Demographic and Health Surveys (DHS) in lieu of collecting income and expenditure data. In theory, an asset-based wealth index represents long-term SES in a similar way to consumption expenditure; asset ownership is likely to be based at least partially on economic wealth and household assets are unlikely to change in response to short-term economic shocks. However, there is a continued debate about the appropriateness of asset-based index.

Various methods have been used to generate the asset based wealth index. The most commonly used method is the Principal Component Analysis (PCA). The method determines weights for components of a wealth index. PCA is a 'data reduction' procedure. It involves replacing a set of correlated variables with a set of uncorrelated 'principal components' that represent unobserved characteristics of the population. The principal components are linear combinations of the original variables; the weights are derived from the correlation matrix of the data or the covariance matrix if the data have been standardized prior to PCA. However, this method is designed to use continuous, normally distributed data. Its' application to the predominantly discrete data in a wealth index is not appropriate [12]. The other problem with this method is that it is not possible to compare the wealth index created across countries or even between the rural areas and the urban areas in the same data set. Therefore, we created our own wealth index based on ordinal variables. Although this method may be preferable to PCA concerning data assumptions, it also requires a strong assumption about the ordinal nature of the data. For instance, we rank the nature of the roofing material used in the main houses based on a score 1 to 3, and assume that they are equally spaced from each other in terms of their relationships with SES.

We ranked roof materials in order from tiles, iron sheets and grass in that order. So the highest is given an ordinal value of three and the lowest grass as 1. Then to normalize it we divided by value by the highest value to range from 0 to 1. The wall material was divided into five, brick/stones (5), plastered (4), wood (3), iron sheet (2) and mud (1). Floor material we had four options and we coded then as earth (1), cement (2), wood (3), and tiles (4). If the household had a toilet was discrete value of 0 or 1. But we further asked the question of the type of the toilet. We had four categories, with the following ordinal values assigned: Outdoor un-walled (1), Pit latrine (2), compost or eco-toilet (3), and flush toilet (4). For sources of water in dry periods we had 14 categories with piped water into the compound (7), piped water outside the compound (6), water hawker-cart or *boda-boda* (a bicycle taxi) (5), water tank and roof catchment (4), well and borehole (3),

unprotected spring and protected spring (2),and pond dam/ sand dams lake, stream river (1). At the same time we asked the distances to the sources of water during the dry period in minutes. We them took the inverse of the distance with the lowest distance having a value of 1.

We also recorded the type of cooking fuel used in the household. This was divided into 8 categories that were further divided into 6 categories. The first category animal dug (1), firewood (2), charcoal (3), paraffin (4), solar power, biogas (5), LPG gas and electricity (6). We assigned the type of lighting as follows: wood fuel (1), tin lamp (2), lantern (3), pressure lamp (4), researchable lamps (5), solar power, and electricity (7). All these variables were normalized from 0 to 1. We then added modern household assets that are not considered as means of production. Each of these assets was coded as 0 or 1 depending if the household has it or not. The assets used in the wealth index were radio, TV, telephone/mobile, solar panels, gas cooker, bicycle, motorized water pump, motorcycle, car truck, tractor, and generator. We then added the cattle index. To normalize the cattle index number we divided the total number by the highest number of animals owned.

The wealth index was created by summing the values of different household and asset variables. In addition, the household size and the main socio demographic characteristics of the head of household were taken into consideration when constructing the wealth index. These included sex, education level, whether undertook agriculture as principal activity or not, sold agricultural products, undertook salaried employment, self-employed and whether undertook casual labour. The wealth index scores were further categorized into tertiles; with score of 0 to 11 categorized as "Poor"; those with score 12 to 14 as "Medium" and 15 and above categorized as "High". The maximum score for the wealth index was 29.

2.10.2 Vitamin A Knowledge Score

Knowledge questions regarding nutrition in general and Vitamin A specifically sought to explore the caretaker's knowledge on OFSP and other VA-rich foods. Knowledge about nutrition in general, Vitamin A and OFSP were categorized as being correct or not according to international recommendations. The different items considered for scoring were: 1) about child nutrition i.e. what makes a child grow; 2) about Vitamin A i.e. ever heard of Vitamin A; 3) why is Vitamin A important; and 4) citing three examples of foods rich in Vitamin A. While 1 – 3 above were scored based on Yes/No response, of 1/0 respectively, the fourth variable (three examples VA-rich foods) was based on number of correct foods cited. Vitamin A knowledge score were then further categorized into tertiles; with score of 0 to 2 categorized as "Low"; those with 3 and 4 as "Medium"; while 5 and above categorized as "High". The maximum score for the wealth index was 10.

2.10.3 Frequency of Vitamin A consumption score

We calculated the Helen Keller International (HKI) food frequency index to assess the household risk level of Vitamin A deficiency [13]. A food frequency method counts how often certain foods are eaten over a period of time. Though the method has weaknesses because it does not capture actual amounts consumed, it can be used to predict whether or not Vitamin A deficiency (VAD) is a public health problem in the population as the index has been validated against a biochemical indicator. The household is considered to be at risk of VAD if the mean frequency of consumption of animal sources of Vitamin A is 4 days per week or less or the mean frequency of total consumption of animal and plant sources of Vitamin A is 6 days per week or less.

To calculate the score, we first sum the number of days during the previous week the child or the caregiver consumed Vitamin A rich food from animal source. Next, we then sum the number of days the child or caregiver consumed Vitamin A rich food from a plant source and divide by 6. The following formula was used in calculating the index: weighted total consumption days= total number of days animal sources of Vitamin A consumed + total number of days plant sources of Vitamin A consumed divided by 6.

The weighted consumption score is equal to the total number of days the child or mother consumed Vitamin A rich food item from animal sources plus the adjusted consumption from the plant source. The following animal and plant sources were included in the estimation of the index.

- Animal sources: Eggs with yolk, small fish (daga) fresh (with intact liver) or small fish (daga) dried (with intact liver), liver from any animal or bird (e.g. chicken) or fish, butter, cod liver oil, Vitamin A fortified margarine (BLUEBAND) or oil added, Cerelac (fortified packaged cereal), infant formula (e.g. NAN, etc.), blood added as an ingredient (Mutura), and any sugar to which Vitamin A has been added.
- Plant sources: sweetpotato leaves, dark green leaves (of all kinds), carrots, ripe mango, pumpkin, ripe papaya, OFSP, and yellow-fleshed sweetpotato.

The cut-off point for adequate frequency of Vitamin A intake is 6 for the weighted consumption score.

2.10.4 Dietary Diversity index for Households and Children 6-59 Months

Ten food groups were included in the dietary diversity index calculation for households: 1) starchy staples, 2) dark green leafy vegetables and other Vitamin A rich fruits and vegetables, 3) other fruits and vegetables, 4) internal organ meat, 5) eggs, 6) meat and fish, 7) legumes, nuts and seeds, 8) milk and milk products, 9) oils and fats, 10) any bio-fortified staple. OFSP was categorized as a bio-fortified crop with both energy and Vitamin A. Each food group was scored as 0 if not consumed during the past 24 hours and 1 if consumed in that time period. The dietary diversity index was obtained by summing the scores for the 10 food groups. Therefore, the possible range of the dietary diversity index was from 0 to 10. The household dietary diversity

scores were categorized into tertiles; with score of 0 to 3 categorized as "Low”; those with score of 4 as “Medium”; while 5 and above was categorized as "High".

The food groups used for tabulation of dietary diversity index for children 6 – 59 months old were: 1) grains, roots and tubers, 2) legumes and nuts, 3) dairy products (milk, yogurt, cheese), 4) flesh foods (meat, fish, poultry and liver/organ meats), 5) eggs, 6) vitamin-A rich fruits and vegetables, 7) other fruits and vegetables, and 8) any staples that are bio-fortified. Each food group was scored as 0 if not consumed during the past 24 hours and 1 if consumed. The dietary diversity index was obtained by summing up the scores for the 8 food groups. The possible range of the dietary diversity index was from 0 to 8. The child dietary diversity scores were then categorized into tertiles; with score of 0 to 2 categorized as "Low”; those with score of 3 as “Medium”; while 4 and above was categorized as "High".

2.10.5 Food security / Coping strategy score

Household food security was assessed using the FANTA/USAID’s Household Food Insecurity Assessment Scale (HFIAS) that has been previously validated in a similar context [9]. HFIAS indicators have been validated to provide information about food insecurity on the household level, with a specific focus on access-related characteristics of household food insecurity. Questions are designed to take the participant through the spectrum of experiences with food insecurity beginning with the least severe (i.e. anxiety) to the most severe (going an entire day without eating due to lack of resources to buy food). These included behaviour and perceptions related to household food insecurity; anxiety and uncertainty; insufficient intakes of high quality or preferred foods; insufficient quantity of intake of any foods (i.e. skipping / reducing meals or going to bed hungry). All questions are asked according to a reference period of 30 days preceding the survey.

3.0 Results

3.1 Descriptive statistics sample

3.1.1 Project intervention district household demographics

The demographic characteristics of the 549 study participants together with household characteristics are presented in Table 1. The participating caregivers (including 12 men) had a median age of 30 years (IQR 24 - 37) and most were in monogamous relationships. The median age of the head of the households was 36 years (IQR 30 - 44) with women constituting about 15% as head of households. About 78% of the participating caregivers had at least primary school education, while for the head of households it was about 77%.

There was an average of 3 persons living in the households (IQR 2 - 5) with only 3.3% reported having no access to a mobile telephone. Majority of the household members reported agriculture as the principal activity (89%) with around 45% of the households engaging in sweet potato farming. Illiteracy was high among these households with about 88% of the households either never attended school or had primary school education. Only 4% of the households had undertaken salary employment since 2015, with about 15% describing themselves as self-employed during the same period.

Across the districts, there were significant variations in most of the socio demographic characteristics collected. For example, education levels among households in general and among head of households were significantly different across the districts with a district like Gairo having around 34% of the households with no schooling at all while Mbozi had about 12%. Ownership of cell phones also varied across the districts with Chunya having the largest group of participants (9%) with no cell phone access while other 3 districts of Mbozi, Gairo, and Ulanga had nearly 100% of the participants having access to phones. In terms of growing sweet potato (SP), the district with the largest households involved in SP farming was Mbozi with 75% of households reporting growing SP during 2015 season followed by Waging'ombe at 66%. Iringa had the lowest households involved in SP farming with only 19% reporting the activity. Other variations noted across the districts were in economic front, for example in undertaking salaried employment, casual labour, self-employment, and involving in informal business since 2015.

Table 1: Socio Demographic Characteristics of Baseline survey Participants and Households on OFSP knowledge, farming and consumption and dietary practices in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania										
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**
Respondent sample size (%)		549	65 (11.8)	55 (10.0)	88(16.0)	77 (14.0)	55 (10.0)	99 (18.0)	110 (20.0)	
Age of caregiver – Median[IQR[3]]		30 [24 – 37]	31 [25 – 38]	29 [24 – 33]	30 [24 – 38]	29 [23 – 37]	33 [25 – 41]	29 [24 – 37]	29 [23 – 37]	0.3
Age of head of household – median[IQR[3]]		36 [30 – 44]	40 [32 – 45]	36 [29 – 43]	35 [31 – 45]	33 [28 – 43]	40 [33 – 47]	36 [30 – 43]	39 [30 – 45]	0.3
Caregiver Education Status										
	No schooling	57 (10.4)	4 (6.2)	3 (5.5)	11 (12.5)	5 (6.5)	4 (7.3)	18 (18.2)	12 (10.9)	0.4
	At least Primary	430 (78.3)	54 (83.1)	43 (78.2)	66 (75.0)	63 (81.8)	43 (78.2)	74 (74.8)	87 (79.1)	
	At least Secondary	59 (10.8)	6 (9.2)	8 (14.6)	11 (12.5)	9 (11.7)	8 (15.6)	7 (7.1)	10 (9.1)	
	College or University	3 (0.6)	1 (1.5)	1 (1.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.9)	
Head of household education status										
	No schooling	57 (10.4)	5 (7.7)	4 (7.3)	12 (13.6)	5 (6.5)	2 (3.6)	26 (26.3)	3 (2.7)	<0.001
	At least Primary	422 (76.9)	56 (86.2)	39 (70.9)	65 (73.9)	55 (71.4)	50 (90.9)	66 (66.7)	91 (82.7)	
	At least Secondary	59 (10.8)	4 (6.2)	9 (16.4)	10 (11.4)	13 (16.9)	2 (3.6)	6 (6.1)	15 (13.6)	
	College or University	11 (2.0)	0 (0.0)	3 (5.5)	1 (1.1)	4 (5.2)	1 (1.8)	1 (1.0)	1 (0.9)	
Status of Head of Household										
	Man	469 (85.4)	55 (84.6)	48 (87.3)	78 (88.6)	72 (93.5)	46 (83.6)	78 (78.8)	92 (83.6)	0.2
	Woman	80 (14.6)	10 (15.4)	7 (12.7)	10 (11.4)	5 (6.5)	9 (16.4)	21 (21.2)	18 (16.4)	
Ownership of cell phone										
	Respondent	230 (41.9)	35 (53.9)	24 (43.6)	23 (26.1)	33 (42.9)	32 (58.2)	37 (37.4)	46 (41.8)	
	Household member	195 (35.5)	21 (32.3)	21 (38.2)	35 (39.8)	31 (40.3)	11 (20.0)	40 (40.4)	36 (32.7)	<0.001
	Neighbour / other	106 (19.3)	7 (10.8)	9 (16.4)	22 (25.0)	13 (16.9)	5 (9.1)	22 (22.2)	28 (25.5)	
	No cell phone	18 (3.3)	2 (3.1)	1 (1.8)	8 (9.1)	0 (0.0)	7 (12.7)	0 (0.0)	0 (0.0)	
Household sample size (%)										
	>= 5 Years	2,292 (77.0)	256 (74.0)	205 (74.8)	377 (77.3)	318 (77.8)	231 (77.3)	455 (77.8)	450 (66.5)	
	< 5 Years	686 (23.0)	90 (26.0)	69 (25.2)	111 (22.7)	91 (22.2)	68 (22.7)	130 (22.2)	127 (33.5)	
Household size-median[IQR[3]]		3 [2 - 5]	3 [2 - 5]	3 [2 - 4]	3 [2 - 5]	3 [2 - 5]	3 [2 - 5]	3 [2 - 5]	3 [2 - 5]	0.2

Table 1: Socio Demographic Characteristics of Baseline survey Participants and Households on OFSP knowledge, farming and consumption and dietary practices in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania										
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**
Sex of members >= 5 years										
	Female	1,207 (52.7)	139 (54.3)	116 (56.6)	192 (50.9)	174 (54.7)	114 (49.4)	231 (50.8)	241 (53.6)	0.6
	Male	1,085 (47.3)	117 (45.7)	89 (43.4)	185 (49.1)	144 (45.3)	117 (50.7)	224 (49.2)	209 (46.4)	
Sex of members < 5 years										
	Female	351 (51.2)	44 (48.9)	35 (50.7)	50 (45.1)	54 (59.3)	39 (57.4)	65 (50.0)	64 (50.4)	0.5
	Male	335 (48.8)	46 (51.1)	34 (49.3)	61 (55.0)	37 (40.7)	29 (42.7)	65 (50.0)	63 (49.6)	
Average age (Years) of Members >= 5 -Median[IQR[3]]		20 [10 - 32]	23 [11 - 36]	23 [11 - 33]	19 [10 - 31]	18 [10 - 29]	19 [10 - 33]	18 [10 - 31]	21 [11 - 33]	0.02
Average age (Months) of Members < 5 - Median[IQR[3]]		28 [16 - 41]	30 [19 - 48]	25 [14 – 38]	27 [14 - 39]	28 [16 - 39]	28 [15.5 - 44]	29.5 [14 - 40]	24 [15 - 38]	0.8
Household education status										
	No schooling	446 (19.5)	35 (13.7)	26 (12.7)	65 (17.4)	39 (12.3)	39 (17.1)	156 (34.4)	86 (19.1)	
	At least primary	1,566 (68.6)	193 (75.4)	145 (70.7)	260 (69.5)	231 (72.9)	155 (68.0)	272 (60.0)	310 (68.9)	<0.001
	At least secondary	251 (11.0)	25 (9.8)	30 (14.7)	46 (12.3)	43 (13.6)	32 (14.0)	24 (5.3)	51 (11.3)	
	College or University	20 (0.9)	3 (1.2)	4 (2.0)	3 (0.8)	4 (1.3)	2 (0.9)	1 (0.2)	3 (0.7)	
Household grow SP										
	No	781 (54.6)	153 (81.0)	89 (61.8)	83 (37.9)	49 (25.1)	45 (34.4)	148 (55.4)	214 (74.8)	<0.001
	Yes	650 (45.4)	36 (19.1)	55 (38.2)	136 (62.1)	146 (74.9)	86 (65.7)	119 (44.6)	72 (25.2)	
Household agriculture status										
	Principal	1,224 (88.8)	158 (85.4)	119 (85.0)	191 (88.8)	170 (87.2)	93 (75.0)	250 (97.7)	243 (92.4)	<0.001
	Secondary	154 (11.2)	27 (14.6)	21 (15.0)	24 (11.2)	25 (12.8)	31 (25.0)	6 (2.3)	20 (7.6)	
Sold agricultural products since 2015										
	No	850 (59.7)	104 (55.3)	78 (54.9)	130 (59.4)	85 (43.8)	70 (53.4)	189 (71.3)	194 (68.3)	<0.001
	Yes	573 (40.3)	84 (44.7)	64 (45.1)	89 (40.6)	109 (56.2)	61 (46.6)	76 (28.7)	90 (31.7)	
Undertaken salaried employment since 2015										
	No	1,376 (96.4)	185 (97.9)	120 (84.5)	212 (96.8)	191 (98.5)	127 (97.0)	265 (98.9)	276 (96.8)	<0.001
	Yes	52 (3.6)	4 (2.1)	22 (15.5)	7 (3.2)	3 (1.6)	4 (3.1)	3 (1.1)	9 (3.2)	

Table 1: Socio Demographic Characteristics of Baseline survey Participants and Households on OFSP knowledge, farming and consumption and dietary practices in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania										
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**
Done casual labour since 2015										<0.001
	No	979 (68.6)	127 (67.2)	89 (62.7)	187 (85.4)	142 (73.2)	86 (65.7)	159 (59.3)	189 (66.3)	
	Yes	449 (31.4)	62 (32.8)	53 (37.3)	32 (14.6)	52 (26.8)	45 (34.4)	109 (40.7)	96 (33.7)	
Household member in informal business since 2015										0.07
	No	1,144 (80.1)	159 (84.1)	123 (86.6)	164 (74.9)	150 (77.3)	109 (82.6)	209 (78.0)	230 (80.7)	
	Yes	285 (19.9)	30 (15.9)	19 (13.4)	55 (25.1)	44 (22.7)	23 (17.4)	59 (22.0)	55 (19.3)	
Self-employment since 2015										<0.001
	No	1,216 (85.3)	146 (77.3)	103 (72.5)	193 (88.1)	168 (86.6)	113 (86.3)	250 (93.3)	243 (85.9)	
	Yes	210 (14.7)	43 (22.8)	39 (27.5)	26 (11.9)	26 (13.4)	18 (13.7)	18 (6.7)	40 (14.1)	

[1] – The percentages represent column percentages

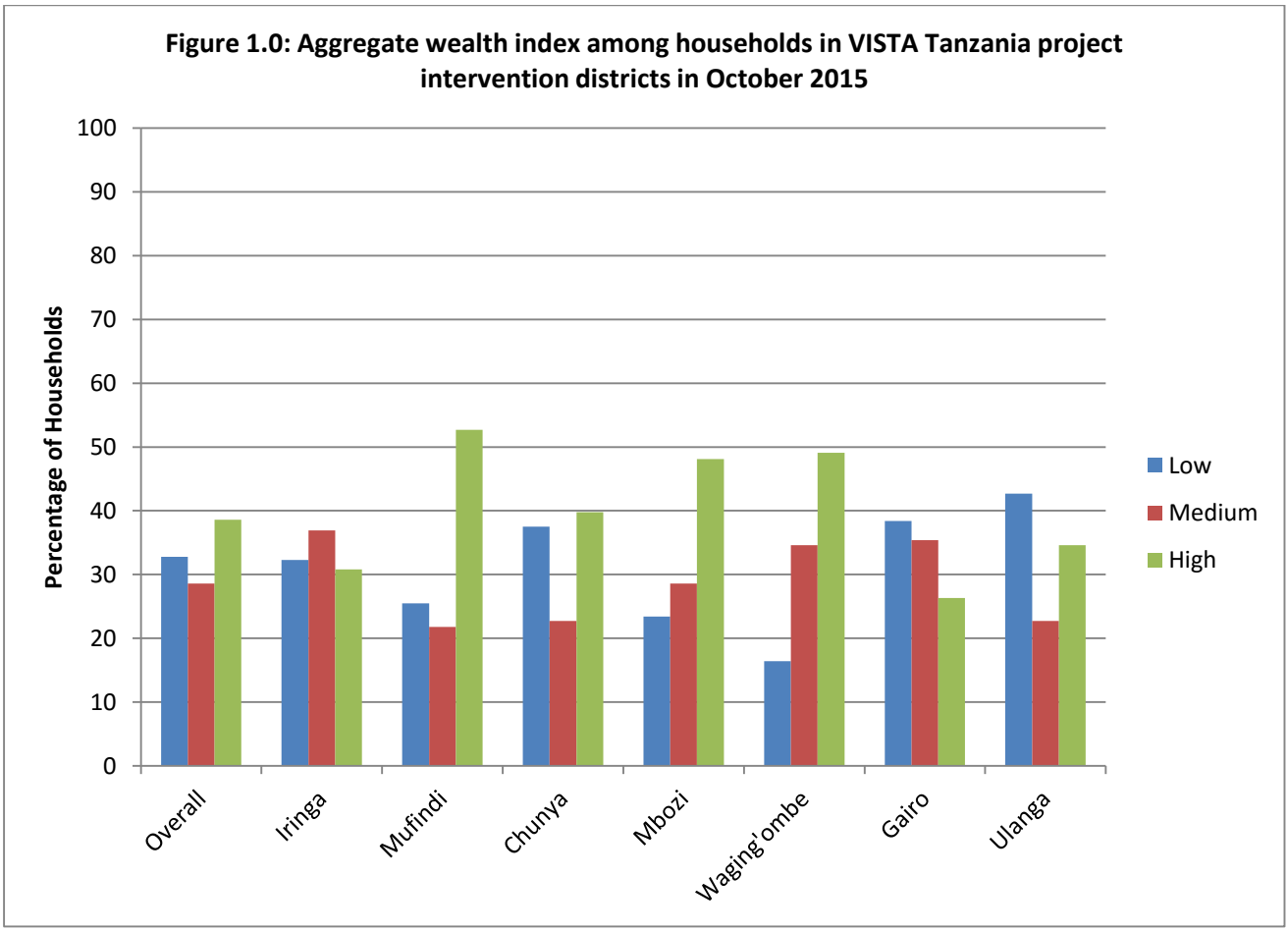
[2] - Pearson's chi-squared for proportions and nonparametric equality-of-medians test for averages

[3] – Inter-Quartile Range

3.1.2 Household Wealth Index

As a composite measure of household aggregate living standard, the wealth index showed large differences across districts (Fig 1) although on the whole, a high proportion of households were in the high and medium categories of wealth index. However, Gairo and Ulanga districts had more households categorized as "poor" while most participants from Chunya, Mbozi, Mufindi and Waging'ombe were in "high" wealth index. More respondents from Iringa DC were in medium than low and high wealth index category (Figure 1).

Figure 1.0: Aggregate wealth index among households in VISTA Tanzania project intervention districts in October 2015



3.1.3 Community access to Health, Agriculture and Nutrition Activities

Most access roads in the survey districts are earthen and rugged with an average distance of 6.7 km to nearest market. The most common mode of transport to the markets is motorcycle, commonly referred to as *boda boda.* About 60% of the villages included in the baseline survey reported agricultural interventions being provided by both the government and private sector, particularly on seed provision and extension services.

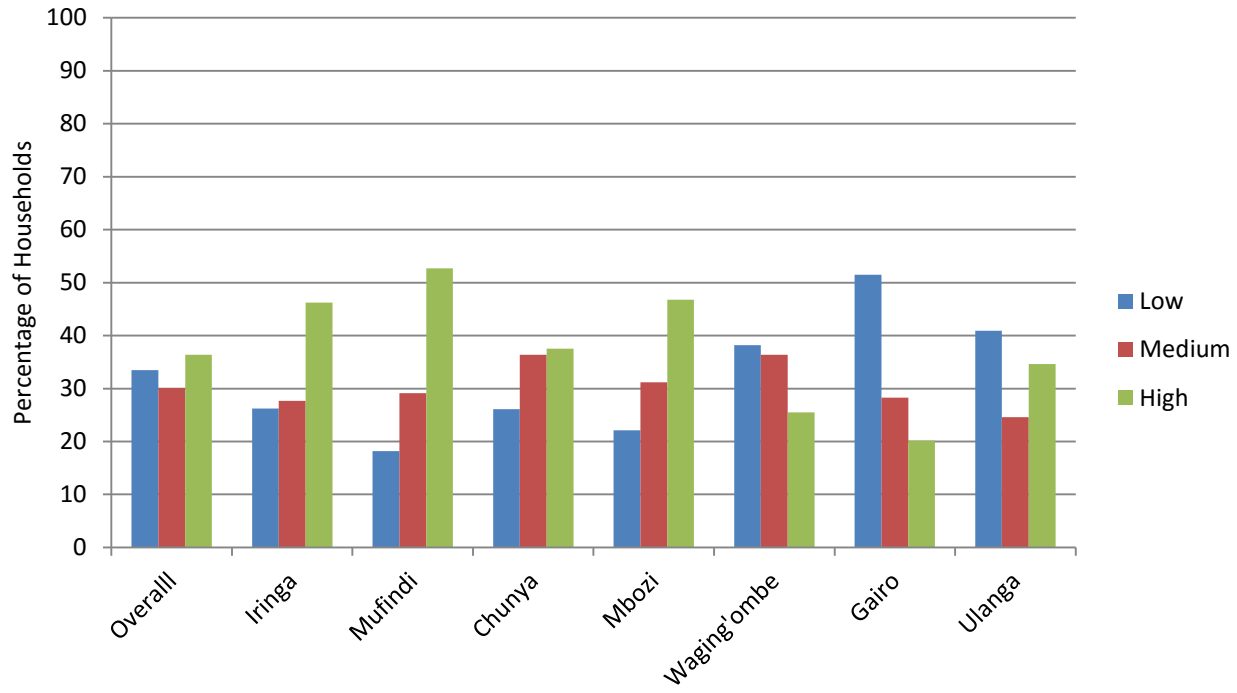
Forty seven percent of the villages (23 out of 49) indicated presence of health interventions however, Vitamin A campaigns were limited to only 8% (4 villages) of the villages. Interestingly, 69% of the village heads

revealed presence of villages' health committees that oversee health and nutrition issues in the community. However, the survey did not access the composition, skill and knowledge base of these committees.

3.2 Household and Young Child Dietary Diversity

The household and children dietary diversity scores were based on a 24-hour recall of key food group consumed. Across the seven districts, more households achieved "high" diet diversity than "low" and "medium" categories, respectively (Figure 2). However, Mbozi, Iringa and Mufindi districts had more households with "high" diet diversity category than the other districts. Gairo and Waging'ombe districts had most households within the "low" diet diversity category.

Figure 2.0 Household Dietary Diversity Scores in the VISTA Tanzania Project intervention districts in October 2015

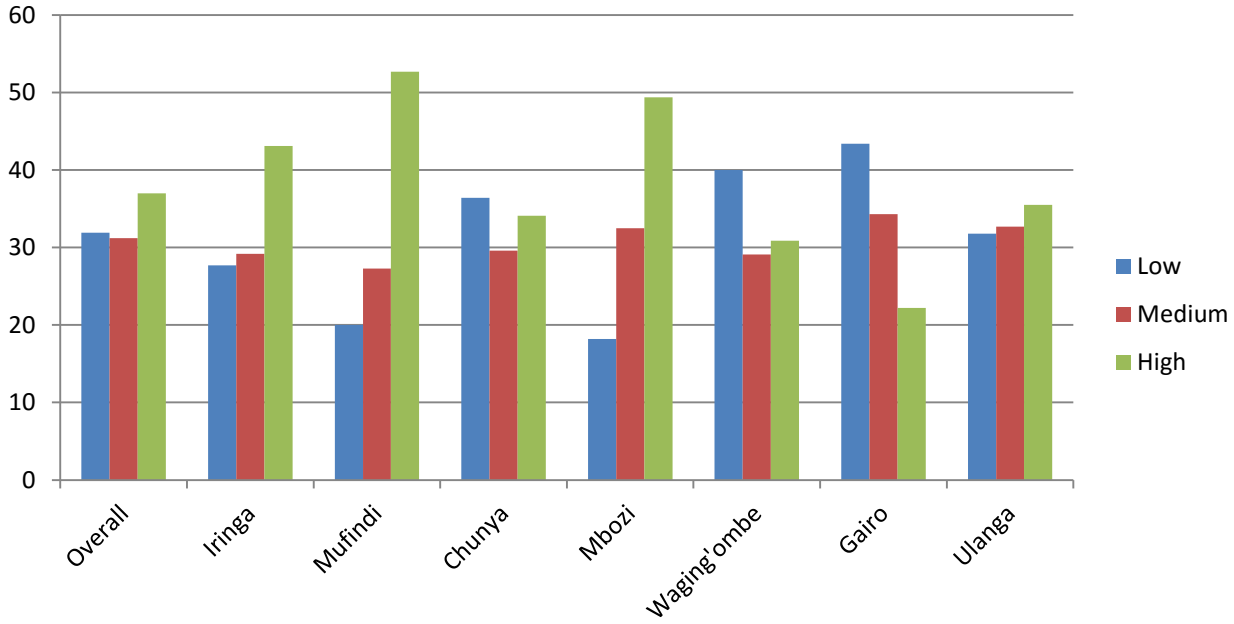


Data indicate most children in the households had "low" to "medium" dietary diversity index with less than 40% of the young child dietary diversity index being in the "high" category (Figure 3). Three districts (Mufindi, Mbozi and Iringa) out of the 7 had more than 40% of the young children having "high" diet diversity scores. Waging'ombe and Gairo districts had more HH with young child diet diversity score within the "low" category than in the "medium" or "high" categories.

The consumption of OFSP among the households and among young children did not come as a surprise as this has been reported elsewhere in Tanzania [4]. The reported 0.4% of households surveyed consuming

OFSP was lower than the 2% reported by CIP's Mwanzo Bora project in the lake zones and specifically reported in Iringa and Gairo districts.

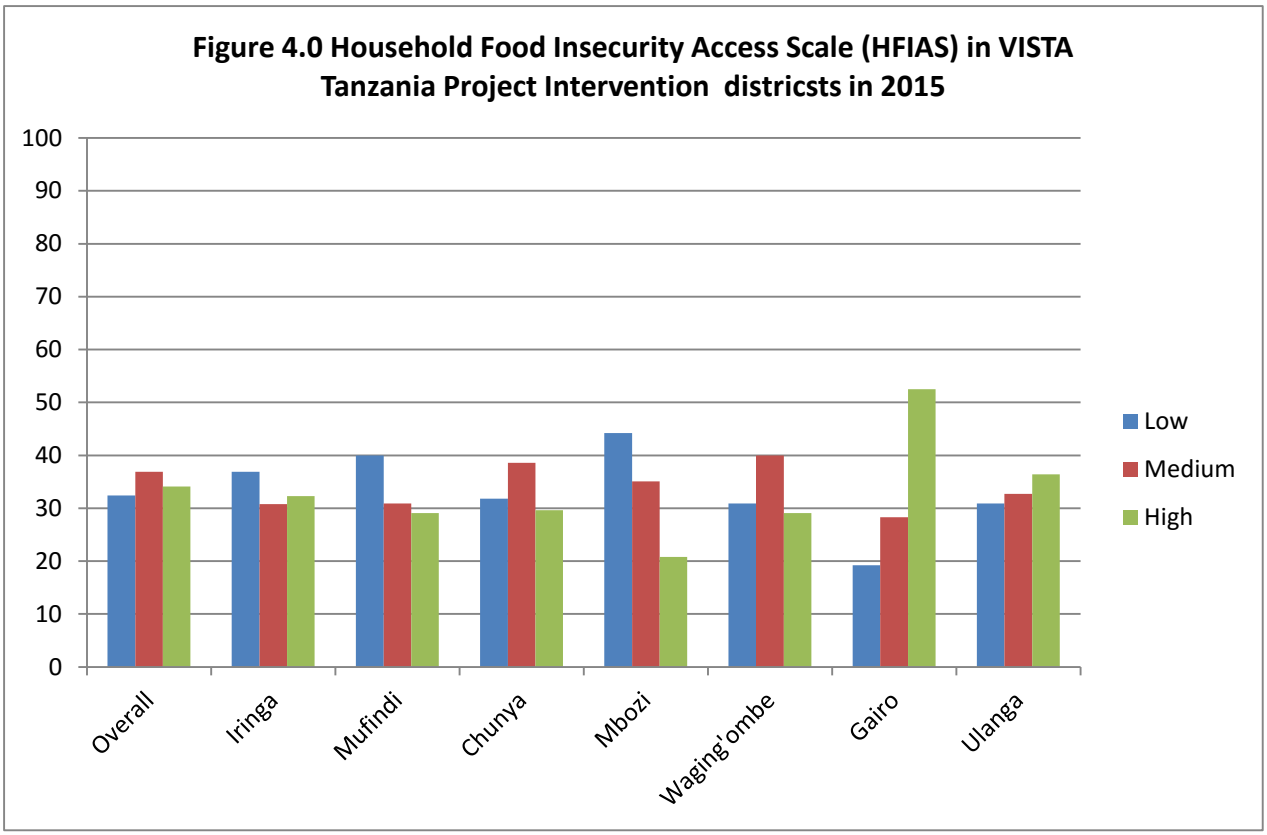
Figure 3.0 Young Child Dietary Diversity Scores in VISTA Tanzania project intervention districts in October 2015



3.3 Household Food Security

Overall, most HH were in medium and high food insecurity category (Figure 4). Most districts were food secure, apart from Gairo and Ulanga in which food insecurity seemed to be a big challenge. For example Gairo district had about 53% of the households categorized as high HFIAS, indicating over half of the population were food insecure.

To get a better situation on the food security, we asked households, which months in the past year they received less than two meals a day from their own resources. Most households experience food shortages in December, January, and February. These months coincided with the beginning of the rainy season, planting of annual crops or new annual crops.



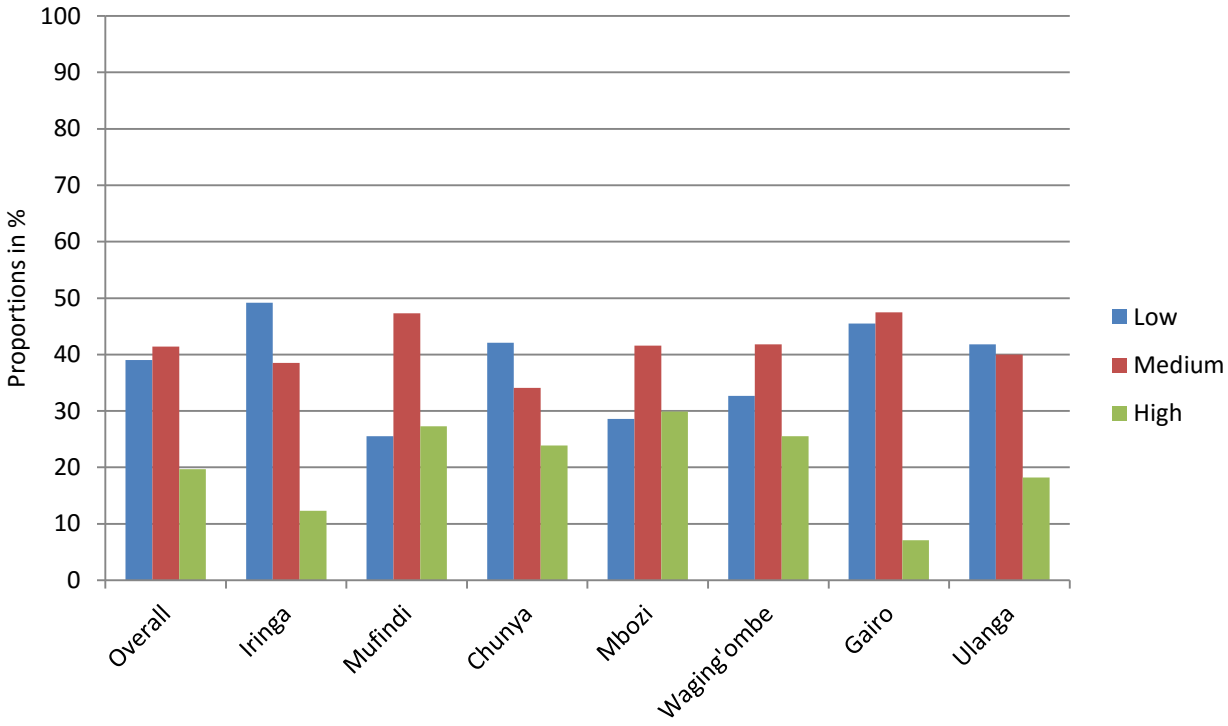
3.4 Vitamin A Knowledge and Food Consumption of Vitamin A rich foods

Based on nutrition questions in general and Vitamin A in particular, the results indicated a number of caregivers lacked information and knowledge on good nutrition and importance of Vitamin A. Overall, only about 20% had a high Vitamin A knowledge and information index (Figure 5). Iringa, Chunya and Ulanga had the highest proportion of respondents with "low" vitamin A knowledge. The situation in Gairo district was not any different considering that most caregivers were in "low" or "medium" knowledge category of vitamin A.

The most common source of Vitamin A knowledge was the health unit (45%) followed by school (27%) and community health workers (CHWs, 13%).

In terms of food consumption of Vitamin A rich foods, there was very low consumption reported both at the caregiver as well as the reference child level. The overall consumption of vitamin A-rich food for children at the recommended six days a week was 16% over the project intervention districts. The overall consumption of Vitamin A rich foods for the caregivers was 17%. Iringa had the highest proportion of children consuming Vitamin A rich foods (22%) followed by Gairo (19%), Ulanga and Waging'ombe (18%), Mufindi (16%), Chunya (13%) and Mbozi (7%).

Figure 5.0 Vitamin A Knowledge Score of VISTA intervention Districts in October 2015



On the mass media front, about 33% of the survey participants reported not to have listened to radio in the past month, with those who reported having listened to radio, heard about OFSP 22% of the times in the past month.

Most of the participants (51%) obtained the sweetpotato for home consumption from the local market while 43% of the respondents got it from their own fields. Most of the respondents (82%) consumed sweetpotato as a breakfast meal and few as main meal.

3.5 General Farming and Crop Production

The interviewed participants cultivated about 4 acres of land per HH during the 2014/2015 cropping seasons; however, there were wide variations across the districts. Land use for crop production was greater in Iringa, Gairo, and Ulanga districts (5 acres each). Incidentally, these same districts were the least food secure and had the highest number of HH with low diet diversity and low consumption of vitamin A rich foods. Mufindi (2.5 acres) and Chunya (2.6 acres) districts had the lowest cultivated acreage per household.

The most commonly produced crops during 2014/2015 cropping seasons were maize (31%); beans (18%); and sweetpotato (17%) although variations across the districts were evident (Table 2). Notably, sweetpotato (SP) was among the top three produced crops in Mufindi, Chunya, Waging'ombe, Gairo and Ulanga districts

but did not feature high among the crops that were sold routinely by the household for income except in Gairo district where it was the second most sold crop (Table 2).

Table 2.0. Most Produced and Sold Crops in Selected Districts of Morogoro, Iringa and Mbeya Regions of Tanzania

	Iringa	Mufindi	Chunya	Mbozi	Waging'ombe	Gairo	Ulanga
Produced	Maize (28.5)	Maize (34.8)	Maize (30.7)	Maize (22.1)	Maize (25.0)	Maize (51.3)	Rice (35.6)
	Rice (20.4)	Beans (27.7)	SP (19.3)	Beans (21.2)	Beans (21.2)	SP (18.9)	Maize (30.9)
	Beans (14.6)	SP (13.5)	Beans (17.5)	G/nuts(18.2)	SP (19.1)	Beans (13.6)	SP (12.3)
Sold	Rice (36.0)	Maize (36.7)	Maize (40.6)	G/nuts(24.6)	Maize (35.3)	Maize (35.9)	Rice (44.3)
	Maize (22.0)	Beans (32.7)	Rice (15.9)	Maize (21.9)	Beans (27.5)	SP (28.1)	Maize (25.0)
	G/nuts (12.0)	S/cane (8.2)	G/nuts(15.9)	Beans (21.9)	Cassava (11.8)	Beans (20.3)	Beans (9.1)

3.6 Sweetpotato knowledge, production, sales, consumption and seed systems

About 47% of the participants cultivated SP during the 2014/2015 cropping season with considerable variations among the project intervention districts. Waging'ombe district had the highest percentage (76%) of participants reporting growing SP in 2014/15 cropping season. The other districts in order of SP growing households were Mbozi (75%), Chunya (61%), Gairo (38%), Mufindi (38%), Ulanga (26%) and Iringa (25%). Just like land used for crop production varied across districts, so was the acreage used for SP cultivation. The average acreage used for sweetpotato cultivation across the seven districts was 0.6 acres with Waging'ombe and Gairo having an average of 1 acre per HH dedicated to SP production.

The months between April and August were the major SP harvesting periods. However, in most districts, peak SP harvesting is in June.

Sweetpotato production in the project intervention districts was dominated by white-fleshed (73%), and yellow-fleshed varieties (26%). The orange-fleshed variety (OFSP) was grown by 0.8% of the participating households (1 household in Mufindi and two in Gairo districts). No respondent in other districts reported having grown OFSP in 2014/15. About three quarters of the interviewed respondents that produced SP indicated that they were not for sale but used for home consumption.

Sweetpotato farming in the project intervention districts is gender-sensitive and involved both spouses in decision making on SP production. About 54% of the participants had both the husband and wife deciding on the amount of land to be used for SP cultivation in a given cropping season.

The source of SP planting material among respondents in the project intervention district is predominantly home-based where 91% of the participants produce their own planting materials. The remainder obtain SP planting materials from neighbours and relatives. The business in SP planting material is not strong

considering that 71% of the participants got vines for planting for free with 29% buying SP planting material from other sources.

4.0 Summary, Conclusions, and Recommendations

4.1 Summary and Conclusion

This report presents baseline data on different aspects of the prevailing OFSP knowledge, farming and consumption and dietary practices of caregivers of households with children aged between 6 to 59 months in the project intervention districts of Morogoro, Iringa, and Mbeya regions of Tanzania. These data are expected to inform the designing of the VISTA Tanzania Project to be undertaken by CIP in partnership with other implementing partners and be used as benchmark for later evaluation at the end of the intervention. This report has presented several findings that are important for understanding the prevailing conditions at the intervention districts particularly on sweetpotato knowledge, farming, and practices in and for designing an elaborate intervention that is responsive to local community needs. The following summarizes some of the key findings generated from this survey:

The wealth index, a composite measure of a household's cumulative living standard, was modest in this population with about 33% categorized as “poor”. There was however, large differences across districts, with a district like Ulanga having 43% of the population as being “poor” while only 16% were reported in Waging’ombe. Household food security assessed using the FANTA/USAID Household Food Insecurity Assessment Scale (HFIAS) was also modest (34%) with differences observed across districts. Gairo and Ulanga districts, representing Morogoro region, were the most food insecure districts with high HFIAS scores of 53% and 36%, respectively. The disparities noted in terms of household wealth index (a surrogate measure of level of poverty) and household food security among the 7 districts presents a challenge in that it calls for more efforts to be directed at those districts that need uplifting.

Based on nutrition questions in general and Vitamin A in particular, the results indicated a number of caregivers lacked information and knowledge on good nutrition and importance of Vitamin A. Overall, only about 20% had adequate knowledge and information on Vitamin A knowledge, with most common sources of Vitamin A knowledge being health units, schools and community health workers (CHWs).

In terms of consumption of Vitamin A rich foods, there was very low consumption reported both at the caregiver as well as the reference child level. Only 16% of the households interviewed consumed vitamin A rich foods 6 days in a week. The very low consumption of OFSP among the households and among young children did not come as a surprise as this has been reported elsewhere in Tanzania [4]. The reported 0.4% of households surveyed consuming OFSP was lower than the 2% reported by CIP’s Mwanzo Bora project in the Lake Zones. Vitamin A deficiency among children dramatically increases the risk of death, blindness and illness, especially from measles and diarrhoea. OFSP as a source of vitamin A provides an inexpensive, quick, and effective means to improve vitamin A status and save children's lives and is achievable at a large scale.

The interviewed participants cultivated approximately 4 acres of land per household during the 2014/2015 cropping seasons. The most produced crops during 2014/2015 cropping seasons were maize (31%), beans (18%), and sweetpotato (17%) although variations across the districts were evident. Of the 4 acres under cultivation, sweetpotato production covered 0.6 acres (IQR: 0.3 – 1.0) and was mainly dominated by white-fleshed (73%), and yellow-fleshed varieties (26%). The orange-fleshed variety (OFSP) was cultivated by only 0.8% of the households. The presence of OFSP among the households in the project intervention districts is so low that there will be need for more aggressive approach to promote the varieties or there will be need to intervene longer than three years allocated to VISTA Tanzania to ensure that the production and adoption of OFSP is highly established through an improved seed system delivery mechanism.

The source of SP planting material among respondents was predominantly home-based where 91% of the participants produced their own planting materials. The remaining percentages obtained SP planting materials from neighbours and relatives. The business in SP planting material was not strong considering that 71% of the participants got vines for planting for free with 29% buying SP planting material from other sources.

These findings have consistently indicated that poor living standards coupled with household food insecurity were major problems across intervention districts. Lack of knowledge on nutrition and in particular Vitamin A together with low consumption of foods rich in Vitamin A present other challenges that may lead to poor dietary habits. As such, these results form the basis for planning and implementing sustainable community-based intervention project to promote good agricultural and nutritional practices in the VISTA FtF ZOI. Given the important role of agriculture as the main source of both food and income for the rural poor in Tanzania, nutrition-sensitive agricultural development as a multi-sectoral approach holds potential for addressing these problems. Undertaking all the proposed strategies of integrating nutrition promotion into agricultural interventions targeting the different and varied intervention districts is a big challenge. A participatory approach must be followed where strategies are prioritized and phased in to ensure meeting the community priorities and needs, as well as for sustainability. Community approval and participation must be ensured for all the proposed activities.

4.2 Caveats and Limitations

A baseline survey can measure a number of project indicators in a rural community, covering a reasonably large sample quickly and accurately. To achieve this, several advance preparations will have to have been made, and some favourable pre-conditions met. Baseline surveys have important strengths, which is why they are so commonly used. They also have important limitations, which is why they are useful only for certain variables and topics. It is no wonder that the baseline survey of VISTA Tanzania share the strengths and limitations of surveys generally.

The data from this baseline survey were mainly obtained from women of reproductive age (98%) and information obtained from such women is of considerable interest to a nutrition-sensitive agricultural program. They are the best informants available regarding knowledge, farming and consumption and dietary practices among households, and are usually the best informants available regarding the health of their children. They are also the primary target audiences for many health education messages. In addition, the women are also usually reliable respondents regarding the social, educational, and general economic situation of the household.

All sample surveys are subject to sampling error and other possible biases, but there are some additional limitations when the evaluation is a rapid one, and it is worthwhile to mention these as they may affect the interpretation of the findings. Although we employed random sampling procedures in selecting households for this survey, there were situations non-probability sampling procedures were used particularly in selecting the villages. We required villages to be selected based on their proximity to already established farmer groups for ease of SP vine distribution. Due to the purposive sampling methods employed in selecting potential villages at the first stage of sampling, the study sample may comprise of a different socio demographic characteristics than the populations from which they were sampled. Therefore, these data may only represent the experiences of the survey population and findings cannot be generalized to any population beyond the respondents.

The requirement for speed also reduces the detail which can be drawn from individuals. This particularly applies to teasing out knowledge and attitudes: details of knowledge and the experience participants have had are squeezed into rather terse categories, with limited opportunity for probing the responses or the underlying reasons for a particular attitude.

The shortness of the interviews tend to make it difficult to build up sufficient rapport with some respondents for them to release some intimate information, even when a private location for the interview has been found. It is sometimes hard, in a 45-60 minute interview, to unearth genuine facts.

Impact of limitations: The above limitations posed some challenges to the interpretations of the findings; however, overall, the data and information collected were satisfactory for recording benchmark information on different aspects of OFSP knowledge, farming and consumption and dietary practices in the area.

4.3 Recommendations

These results formed the basis for planning and implementing sustainable community-based interventions for the VISTA project. The focus of USAID's Feed the Future (FtF) initiative were particularly meant to reduce poverty, malnutrition and household food insecurity, but it is impossible to undertake all the interventions simultaneously to be effective and meet the needs. A participatory approach must be followed, prioritized

and implemented in phases to meet the community priorities and needs, as well as for sustainability purposes. Community approval and participation must be ensured for all the proposed interventions.

Based on the findings of this baseline survey, we propose the following:

- ✓ There is need for speedy and effective implementation of the proposed VISTA Tanzania interventions aimed at increasing agricultural productivity through improved farming methods, land development and supporting enterprise development. This will address the underlying causes of household food insecurity;
- ✓ There is need to roll out VISTA's nutrition education with implementing partners as an umbrella for dietary diversification by means of novel product development to address specific nutritional needs. This will address malnutrition as a result of household food insecurity;
- ✓ Simultaneous training programmes, aiming to provide skills, should be implemented to support the effectiveness and sustainability of the community-based interventions. As the mother performs most of the important functions in the household and a great majority of these women are unemployed (96.2%), the focus for knowledge and skills training programmes should aim to uplift their livelihood and improve the community infrastructure.
- ✓ Creation of awareness of good health and hygiene practices will improve the wellness of the local community. Women can benefit from the knowledge of health practices in an underprivileged area and can, in turn, improve the quality of life in their community by means of enhancement of early childcare and education opportunities.

Furthermore, in order to supplement VISTA intervention activities, there is need for more public health control measures to be promoted in collaboration with the local agricultural and health authorities. These may include but not limited to elaborate extension services, control of infections, education and the support for practice of personal hygiene and sanitation through the water, sanitation and hygiene (WaSH) approach. It is thus important that the development principles of sustainability, equity, productivity and replicability form the underlying basis of all interventions. Furthermore, the following recommendations are made:

- ✓ It is essential that all key implementing partners (IPs), especially the community and local government officials, are involved in project planning and implementation;
- ✓ The needs of the community must be established before any project or intervention can be planned;
- ✓ It is important to stay focused on the community needs and project objectives throughout the project lifeline; and
- ✓ Ongoing feedback and progress reports to the community, as well as other IPs, are essential for the success of this project.

4.4 Learning Experience

- Setting up a baseline survey may seem costly at the beginning but it proves to be cost effective in later stage in visualizing the programme impacts.
- The participatory approach we undertook from the design, testing, implementation and dissemination of the exercise proved useful in the long run
- Rigorous field testing of the survey questionnaire and tools proved essential.
- It was important to keep the questionnaires short, simple and effective.

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6.0 Appendices

6.1 Copy of questionnaire

International Potato Centre (CIP)

Viable SweetPotato Technologies in Africa (VISTA) Project in Tanzania

BASELINE SURVEY DATA COLLECTION FORM

English Version

VISTA BASELINE SURVEY

A. HOUSEHOLD IDENTIFICATION

A01 REGION _____

A02 DISTRICT _____

A03 WARD _____

A04 VILLAGE _____ -

A05 HOUSEHOLD (HH) NUMBER (hhid) _____

A06 STATUS OF HEAD OF THE HH
1- MAN
2- WOMAN WITH THE SUPPORT OF A NON-RESIDENT MAN
3- WOMAN WITHOUT THE SUPPORT OF A MAN

A07 CELL PHONE NUMBER

A07B Phone No. Owner 1- Respondent 2- HH member 3- Neighbour 9- N/A

A08 NAME OF RESPONDENT: _____ IDNO (p2)

A09 TEMPORARY IDENTIFICATION NUMBER (FROM LISTING FORMS) -

A10 IS THIS SAME RESPONDENT FROM LISTING EXERCISE? 0-No 1-Yes

A11 ENUMERATOR'S NAME _____

A12 WERE THE GPS COORDINATES OBTAINED DURING THE VILLAGE LISTING AND ARE AVAILABLE? 0-No 1-Yes
IF NOT PLEASE ENSURE THAT IT IS COLLECTED BEFORE LEAVING THE VILLAGE.

A13 GPS COORDINATES SOUTH :

A14 EAST :

A15 ELEVATION METERS

A16 DATE OF THIS INTERVIEW DAY / MONTH / YEAR

A17 TIME OF THE INTERVIEW START: :

A18 NAME OF THE SUPERVISOR _____

A19 CALL-BACK (FILLED IN BY SUPERVISOR) 0- No 1- Yes

DESCRIBE THE PROBLEMS ENCOUNTERED:

A20 DATE FOR THE SECOND INTERVIEW DAY / MONTH / YEAR

LAST APPROVAL (BY SUPERVISOR) : _____

A21 DATE FOR THE FIRST DATA ENTRY DAY / MONTH / YEAR

A22 NAME OF 1ST DIGITIZER _____

A23 DATE FOR SECOND DATA ENTRY DAY / MONTH / YEAR

A24 NAME OF 2ND DIGITIZER _____

B. HOUSEHOLD MEMBERS WITH AN AGE EQUAL TO OR ABOVE 60 MONTHS (≥5 YEARS)

VILL: ☐☐☐☐-☐☐ HHID: ☐☐

We would like to ask you questions about each member of your household. We will start with those members five years and above. List the names of everyone considered to be a member of this household who have lived here at least 3 months during 2015.

Enumerator: Please start with the head of HH

rshead	01- Head	05- Step child	11- Parent in law
	02- Spouse	06- Parent	12- Son/Daughter in law
	03- Son/daughter	07- Brother/sister	13- Worker
	04- Grandchild	09- Nephew/niece	14- Other relative
		10- Brother/sister in-law	15- No relation

ID NO.	NAME			Sex 0-F 1-M	Relationship with the the head of the HH *see codes*	Year born 8888=Don't know	How many months in the last 12 months has this person been living at home	is ... currently enrolled in formal schooling 0- No 1- Yes	Highest level of formal education completed *(codes below)*	*Fill for HH Head and all adults over the age of 12 years old (yrborn ≤2003)* Marital Status 1- Single 2-Married Monogamous 3- Marital Union 4- Polygamous 5- Divorced or Separated 6- Widowed 9- N/A	Is currently involved in growing sweet-potatoes? 0- No 1- Yes 9- N/A	Is agriculture his/her principle or secondary activity 9- Not applicable 1- Principal 2- Secondary	Since the Beginning of 2015, has this person: Sold agricultural or or livestock products? **0- No 1- Yes** 9- N/A	Undertaken salaried employment? **0- No 1- Yes** 9- N/A	Done casual labour? **0- No 1- Yes** 9- N/A	Been involved in informal business? **0- No 1- Yes** 9- N/A	Been involved in some other form of self-employment (e.g. hair saloon, wood cutting, shops)? **0- No 1- Yes** 9- N/A
IDNO	**First**	**Middle**	**Last**	**Sex**	**rshead**	**yrborn**	**mhome**	**school**	**educ**	**mstatus**	**growsp**	**agract**	**soldagr**	**salary**	**cslabor**	**infmbus**	**selfemploy**

Education levels (educ)

00=pre school	02= std 2	05= std 5	08= form 1	11= form 4	14= cc 10= old form 3	20= No schooling
01= std 1 OR	03= std 3	06= std 6	09= form 2	12= form 5	15=co 12= old form 5	
01- Adult education	04= std 4	07= std 7	10= form 3	13= form 6	16=gr 13= old form 6	

Respondent ID: ☐☐

C. DEMOGRAPHIC OF THOSE WHO ARE LESS THAN 60 MONTHS OF AGE (< 5 YEARS)

VILL: ☐☐☐☐-☐☐ HHID: ☐☐

Now, we are going to ask you about the children in your household that are under five years of age.

(Use 99=N/A)

Child Ident. Number	First and Middle Name		Surname	Sex 0-F 1-M	Date of Birth DAY	MON	YEAR	AGE (in months)	Child's mother Name	IDNO from *(Sec. B)* 87-non-resident 88-Dead	*If caregiver not mother* IDNO of main female caregiver	Child's father: Name	IDNO from *(Sec.B)* 87-non-resident 88-Dead	*If father not* resident IDNO male caregiver
chdid	First	Middle	Surname	chsex	C01	C02	C03	C04	C07	C08	C09	C10	C11	C12
3 1														

D. HOUSEHOLD LEVEL DIETARY DIVERSITY AND YOUNG CHILD DIET DIVERSITY

VILL: ☐☐☐☐-☐☐ HHID: ☐☐ **Pg. 4**

Now we would like to ask you questions about the type of foods eaten in your household yesterday during the day and during the night, and also by your child *[NAME OF THE REFERENCE CHILD]*

Yesterday, did your household consume at least a tablespoon (15 gm minimum) per person of any of the following kinds of food? *Remember: the food item can be part of the whole food prepared*

First ask the question for the whole household for a category of food. *Then if there is a reference child, ask:* **Did *(name of reference child) consume this type of food?***

		Household 0-No 1-Yes	Reference Child 0-No 1-Yes
D01	Any starchy staple, like maize, cassava, cooking banana, sweetpotato	☐	☐
D02	A type of sweetpotato that is orange inside *(enumerator, show the OFSP picture)*	☐	☐
D03	Any legumes or nuts, like beans, groundnuts, seeds, soybean	☐	☐
D04	Any dairy products like milk, yoghurt or cheese	☐	☐
D05	Any organ meat like liver or heart	☐	☐
D06	Any eggs	☐	☐
D07	Any other kind of fish, meat or poultry, like beef, chicken, or pork	☐	☐
D08	Any dark green leafy vegetables	☐	☐
D09	Any vegetables that are orange inside, like pumpkin or carrot	☐	☐
D10	Any fruits that are orange inside, like mango or papaya	☐	☐
D11	Any other kind of fruits or vegetables	☐	☐
D12	Any source of fat, like cooking oil, coconut milk, or butter	☐	☐

D13 *IF THE CHILD ATE OFSP YESTERDAY:* How many times did he/she eat OFSP during the entire day? ***If D13=99, then skip to next section*** ☐☐ (enter # or 88 if doesn't know or 99=N/A)

D14 Approximately how much OFSP did the child eat during the entire day? D14A Number of roots ☐☐.☐☐ D14B Size 1-Very Small 2-Small 3-Medium 4- Large *(Show picture of root sizes)* ☐

D15 Where did you get the OFSP? 1- Personal field; 2- Market; 3- Relative / neighbour; 4- Other ; 8- Doesn't know / remember ☐ Specify other _____ ☐

D1. HOUSEHOLD FOOD SECURITY

VILL: ☐☐☐☐-☐☐ HHID: ☐☐

COPING STRATEGIES

I would now like to ask you about your household's access to food in the last 30 days.

	In the past 30 days, if there were times when you did not have enough food to eat or money to buy food did you ever [review the response]. Enter 0-No, 1-yes; IF yes, How often? ***(Explain the different categories of response to the interviewee)*** *Codes: 0 - Never; 1 - Rarely (1-4 times); 2 - Half the time (5-15 times); 3 - Most days (15-25 days); 4- Every day 8 - doesn't remember ; 9 -- refused*	0-No 1-Yes	How often?
D16	Not eat foods that you prefer because you could not afford them?		
D17	Reduce the frequency of meals		
D18	Reduce the total amount of food eaten in a day		
D19	Harvest a crop prematurely, eat the seed stored for planting the next season, or collect wild fruits & vegetables		
D20	Buy food on credit		
D21	Send children to eat with neighbours or relatives		
D22	Borrow food from neighbours or relatives		
D23	Adults eat with neighbours		
D24	Engage in casual labour		
D25	Go an entire day without food and sleep hungry		

D26 What months of the year do you consume sweetpotato in your meals at least twice a week?

(enumerator, **please record a 1 on the month mentioned and a 0 if a month is not mentioned**)

January	February	March	April	May	June	July	August	September	October	November	December

D27 In the **last 12 months,** which months did you have **less than two meals a day** from your own resources (purchases and production)?

(enumerator, **please record a 1 on the month mentioned and a 0 if a month is not mentioned**)

2014							2015				
November	December	January	February	March	April	May	June	July	August	September	October

D28 In the **last 12 months**, which months did the household receive **relief food or food from an external source?**

(enumerator, **please record a 1 on the month mentioned and a 0 if a month is not mentioned**)

2014							2015				
November	December	January	February	March	April	May	June	July	August	September	October

D29 In the **last 3 years, has there been a particularly difficult situation** in order to have food you were **forced to sell or rent out assets to buy food?** 0-No 1- Yes ☐

E. HEALTH AND NUTRITION KNOWLEDGE

VILL: ____-____ HHID: ____

Now we are going to ask you some questions regarding your opinions about the kinds of foods you eat. ***(Write down the full response.)***

E01 What makes a child grow well? *Does the answer mention:*

_____

_____

E01A Eating sufficient amounts of foods? 0- No 1- Yes 8- Don't know ☐

E01B Eating lots of different kinds of foods? 0- No 1- Yes 8- Don't know ☐

E01C Child does not get sick often? 0- No 1- Yes 8- Don't know ☐

E02 Have you ever heard of Vitamin A? 0- No 1- Yes ☐ **E03** *if yes,* When did you first hear of vitamin A? *if remembers year record year; 8888 if does not remember* Year: ☐☐☐☐

If E02=0, skip to next Module 1- Over 10 years ago 2- Over 5 years ago, but less then 10 3- 2-5 years ago 4- last year 5- just recently 8- can't remember 9-NA ☐

E04 Why is Vitamin A important for us? _____ *Does the answer mention that it:* **E04A** Prevents disease? ☐ **E04B** Protects the eyes? ☐ **E04C** Any other correct fact? ☐

0- No 1- Yes 8- Don't know

E05 Please give me 3 examples of foods rich in Vitamin A. _____ ☐☐☐ _____ ☐☐☐ _____ ☐☐☐

Refer to the code list for Vitamin A rich foods *Remember: We need specific foods and not categories (e.g. not vegetables but specific vegetables such as cabbage, carrot, etc.)*

E06 Where did you learn the names of Vitamin A rich foods? *If the response below is mentioned, fill in the box with "1"; if not mentioned fill in "0"; 9-N/A.*

01-Radio, programme in local language	☐	*04-Community Health Worker/Health extensionist*	☐	*07-Female Friend*	☐	*10-Male Relative*	☐	*13- School*	☐
02-Radio, programme in English	☐	*05-Health Unit*	☐	*08- Male Friend*	☐	*11-Sign in the market/elsewhere*	☐	*14-VISTA Project*	☐
03- Radio programme in Kiswahili	☐	*06-Local Leader*	☐	*09-Female Relative*	☐	*12-Religious Leader*	☐	*15- Other (Specify_____*	☐

E07 *If more than one choice was selected in E06,* Among these which was the most important source of information? *(use codes provided in E06)* ☐

Now, I am going to ask you a few questions about whether and how you listen to the radio & even watch the TV

E08 Last month, how many times did you listen to the radio? 1= Every day 2= 3 to 4 times per week 3= 1-2 times per week 4= Irregularly 5= Did not listen 8= Do not know ☐

E09 Have you ever heard anything about OFSP on the radio during the past year? 0- No 1- Yes 9- N/A never listen to radio ☐

E10 Have you ever heard anything about OFSP on the TV during the past year? 0- No 1- Yes 9- N/A never watch television ☐

E11 When a baby is born, is it good or bad to give the first milk (the colostrum)? ..... 0- Bad 1- Good 8- Don't know ☐

E12 When a mother is healthy, how do the nurses recommend that she breastfeed the infant?

_____ _____

(Looking for exclusive breastfeeding: only breast milk-no food; no water for 6 months) Correct? 0- No 1- Partially 2- Completely ☐

E13A At what age should a baby be given water for the first time? ..... ☐☐ **E13B** *indicate the units using codes: 1-days 2- weeks 3-months 4- years* ☐

E14A At what age should a baby be given other foods such as porridge for the first time? ..... ☐☐ **E14B** *indicate the units using codes: 1-days 2- weeks 3-months 4- years* ☐

E15A At what age should a baby be given sweetpotato for the first time? ..... ☐☐ **E15B** *indicate the units using codes: 1-days 2- weeks 3-months 4- years* ☐

E16A If the mother and the child have no special problems, a mother should breast feed her child until what age? ..... ☐☐ **E16B** *indicate the units using codes: 1-days 2- weeks 3-months 4- years* ☐

E17 How many times should a **breastfed child 6-8 months old** be fed porridge or other foods per day?

E18 How many times should a **1 year old breast fed child** be fed other foods per day?

☐☐

Codes for E17 & E18: 1- <2 times; 2- 2 times exactly; 3- 2-3 times; 4- 3 times exactly; 5- 3 -4 times 6- 4 times exactly 7- 4-5 times; 8- 5 times or more 88- doesn't know

F. FREQUENCY OF CONSUMPTION OF VITAMIN A RICH FOODS DURING PAST 7 DAYS

VILL: ☐☐☐☐-☐☐ HHID: ☐☐

Now we are going to discuss how often your CHILD and HOUSEHOLD members ate/used certain foods during the past week.

Explain to the participant that you want the number of DAYS, not the number of times.

During the past 7 days, how many days did CHILD and your HOUSEHOLD eat *[name of the food]* ? Meaning, how many days, starting with the last day [specify the day], did the CHILD or HOUSEHOLD eat [food] remembering that if the CHILD or HOUSEHOLD, for instance, ate the food at lunch and at dinner on the same day, that just counts as 1 day.

Remember for the child, the food can be part of the porridge, e.g. milk added to maize flour

(NOTE: includes foods not prepared in the household, as long as it was consumed)

	NAME OF THE FOOD	CHILD ID F01	HH/CAREGIVER ID F02
1	Cassava - fresh or flour		
2	Maize (fresh cobs)		
3	Whole chillies		
4	Sukumawiki (kale)		
5	Pumpkin leaves (Majani ya Maboga)		
6	Sweet potato leaves (Matembere)		
7	Amarantha leaves (Mchicha)		
8	Dark green leaves (of all kinds)		
9	Cows milk/goats milk/powdered/tea with milk		
10	Carrots		
11	Ripe mango		
12	Pumpkin		
13	Ripe papaya		
14	Ugali / porridge made of sorghum /millet /maize		
15	Rice		
16	Pumpkin seeds or other seeds		
17	White fleshed sweetpotato		
18	Orange-fleshed sweetpotato (OFSP)		
19	Yellow-fleshed sweetpotato		
20	Eggs		
21	Small fish (Daga) FRESH (with intact liver)		
22	Small fish (Daga) DRIED (with intact liver)		
23	Small fish (Daga) or large fish SOUP ONLY		

	NAME OF THE FOOD	CHILD ID F01	HH/CAREGIVER ID F02
24	Groundnut or cashew nut		
25	Chicken		
26	Liver - from any animal or bird (e.g. chicken) or fish		
27	Meat from cow/pig/sheep/rabbit/rat		
28	Butter		
29	Beans (all kinds)		
30	Wheat/biscuits/cookies/bread		
31	Cod liver oil		
32	Food fried in oil or with oil		
33	Vitamin A fortified margarine (BLUE BAND) or oil added e.g. KIMBO		
34	Prawn/crab		
35	Coconut milk (picture)		
36	Cerelac (fortified packaged cereal)		
37	Infant formula (e.g. NAN, etc.)		
38	Any other cereal e.g. CEREVITA, WEETABIX		
39	Blood added as an ingredient (Mutura)		
40	Any sugar to which Vitamin A has been added		
41	Any fish larger than Daga FRESH or DRIED		

F03 *If SP is eaten:* Was it available from (1- Your field 2-Market 3-relative/neighbour 4-Other 8-Don't know)? ☐ **F03B** Specify other _____ ☐☐

F04 *FOR THE **CHILD** IF CONSUMED SP:* On a day when [NAME] eats SP, is it for... 0- No 1- Yes 8- Don't know A- Snack ☐ B- Breakfast ☐ C- Lunch ☐ D- Supper/Dinner ☐

If no SP consumed, skip to F05

F05 *FOR THE **HOUSEHOLD / CARETAKER** IF CONSUMED SP:* On a day when you or HH eat SP, is it for... 0- No 1- Yes 8- Don't know A- Snack ☐ B- Breakfast ☐ C- Lunch ☐ D- Supper/Dinner ☐

G. AGRICULTURE -- CROP PRODUCTION

VILL: ☐☐☐☐-☐☐ HHID: ☐☐

Now we would like to learn about what crops you grow on your farm.

G01 In 2014/2015 cropping seasons, how many fields were cultivated by this HH? Uplands ☐☐☐ Lowlands ☐☐☐

G02 Please estimate the total area of the land cultivated in the uplands and lowlands Uplands ☐☐☐.☐☐ Units ☐ Lowlands ☐☐☐.☐☐ Units ☐

note: this includes own land and any rented or borrowed land

Unit codes: 1- M^2 2- Acres 3- Hectares

G03 In 2014/2015 cropping seasons how many full time or part time workers did you hire to you help with your agricultural/livestock activities?

0- No 1- Temporary workers 2- Full-time workers 3- Both ..... ☐

Which of the following crops were produced or sold by your HH during the 2014/2015 seasons?

Crop	Did your HH PRODUCE this crop in 2014/2015? 0- No 1- Yes	Did your HH SELL this crop 0- No 1- Yes	Which is the most important crop for the HH Rank all in order (1 =highest) 99= N/A
G04	G05	G06	G07
01- Maize			
02- Rice			
03- Sorghum			
04- Cassava			
05- Sweetpotato			
5a. White-fleshed			NO RANKING
5b. Yellow-fleshed			NO RANKING
5c. Orange-fleshed			NO RANKING
06- Beans			
07- Groundnuts			
08- Bananas			
09- Sugar cane			

Tree crops

G23	G24	G25	G26
	Produce?	Sell?	Number of trees
10- Papaya			
11- Mangoes			
12- Guava			

G27 *If did not grow any sweetpotato,* Why not?

_____

_____ ☐☐

01- Not enough land 02- Lost vines 03- No access to vines 04- Prefer other crops
05- Husband refused to let me plant 06- Inadequate rain 07- Low production 08- Other specify

(please recode the crop name first and then put the code on the box provided)

G08 Which of the crops was the most productive during the 2014/2015 season ? ☐☐

(Use the codes found under G04 in the table on the left) .....

If the most productive was Not sweetpotato, then fill the following:

(In this section please fill one of them either with the husk or without husk)

G09 Quantity WITH HUSK ☐☐☐.☐☐ **G11** WITHOUT HUSK or in GRAIN ☐☐☐.☐☐

G10 Unit of measure ☐☐ **G12** Unit of measure ..... ☐☐

(Units of measure codes are below)

G13 Which of the crops was the second most productive during the year 2014/2015 ? ☐☐

(Use the codes found in the table on the left) .....

If the second most productive was Not sweetpotato, then fill the following:

G14 Quantity WITH HUSK ☐☐☐.☐☐ **G16** WITHOUT HUSK or in GRAIN ☐☐☐.☐☐

G15 Unit of measure ..... ☐☐ **G17** Unit of measure ..... ☐☐

G18 Which of the crops was the third most productive during the year 2014/2015 ? ☐☐

(Use the codes found in the table on the left) .....

If the third most productive was Not sweetpotato, then fill the following:

G19 Quantity WITH HUSK ☐☐☐.☐☐ **G21** WITHOUT HUSK or in GRAIN ☐☐☐.☐☐

G20 Unit of measure ☐☐ **G22** Unit of measure ..... ☐☐

UNIT OF MEASURE

01- KG	02- UNIT	08- 25 KG BAG (EQUIVALENT IN MAIZE)	14- 1Ltr CAN
03- 100 KG BAG (EQUIVALENT IN MAIZE)		09- 10 KG BAG (EQUIVALENT IN MAIZE)	15- TONS
04- 90 KG BAG (EQUIVALENT IN MAIZE)		10- 25Ltr CAN	16- OX CART
05- 70 KGS BAG (EQUIVALENT IN MAIZE)		11- 20Ltr CAN	17- SADO
06- 60 KG BAG (EQUIVALENT IN MAIZE)		12- 10Ltr CAN	18- DEBE
07- 50 KG BAG (EQUIVALENT IN MAIZE)		13- 5Ltr CAN	19- BUNCHES
			20- STACK

H. SWEETPOTATO PRODUCTION, SALES, AND CONSUMPTION

VILL: ☐☐☐☐-☐☐ HHID: ☐☐

Now, we would like to talk in detail about your sweetpotato crop that was planted and harvested in 2015 as well as any planted in late 2014 and harvested in early 2015.

H01 How many different sweetpotato fields did your household have? ..... **H01A** In the upland areas ☐☐ **H01B** in lowland areas? ☐☐

H02 Of these sweetpotato fields, how many do you have the principle responsibility for managing? **H02A** In upland areas: ☐☐ **H02B** in lowland areas? ☐☐
(If H01 and H02 are 0 then skip to I01)

H03 ***(If manages own plots:)*** Do you have to ask your husband/spouse or someone else for permission to use the land you manage? 0- No 1-Yes ☐ **H03B** Do you hire labour for your sweetpotato production? 0- No 1-Yes ☐

H04 Who decides how much to grow of Sweetpotato? 1- Husband 2- Wife 3-Both 4-Other ☐ **H05** Do you plant on ridges, mounds or on the flat? **H05A** Ridge ☐ **H05B** Mounds ☐ H05C Flat ☐

H04B *if other, specify:* _____ *(0-No, 1-Yes)* ***(Show pictures for Ridges, Mounds, and Flat)***

H06	**H07**	**H08**	**H09**	**H10**	**H11**	**H12**	**H13**	**H14**	**H15**	**H17**															**During the major harvest month of ..**				**During the minor harvest months**			
																									H18 How many times did your hh harvest per day?, per week?, or per month?		H19 Each time your hh harvests, how much did it harvest? (Units codes are below)		H20 How many times did your hh harvest per day?, per week?, or per month?		H21 Each time your hh harvest, how much did it harvest? (Units codes are below)	
Field Number	Location of plot	Area of the plot (Quantity)	Area Units	Plot has WFSP?	Plot has YFSP or PFSP?	Plot has OFSP?	Est. Total No. Diff-erent varieties of SP on plot	Inter-cropped?	Crop Code for the dominant Inter-crop	Tell us in which months did your hh harvest large quantities of SP or which you harvested minor quantities for consumption or for sale															Times	Unit	Qty	Units	Times	Units	Qty	Units
	1-near house 2-upland 3-lowland		1- M^2 2- acre 3- Ha	0-No 1-Yes 8-DK	0-No 1-Yes 8-DK	0-No 1-Yes 8-DK		0-No 1-Yes 8-DK	(See crop/ food codes)	0- No harvest 1- Months of minor harvest 2- Months of major harvest																1- day 2- Week 3- Month	(codes below)		(codes below)		1- day 2- Week 3- Month 4- Units		
										Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct										

Units of Measure

01- Kg	05- 70 Kgs Bag	09- 10 Kg Bag	13- 5 Ltr Can	17- Sado	21- Other-Specify
02- Numbers	06- 60 Kg Bag	10- 25 Ltr Can	14- 1 Ltr Can	18- Debe	
03-100 Kg Bag	07- 50 Kg Bag	11- 20 Ltr Can	15- Tons	19- Small basin	
04- 90 Kg Bag	08- 25 Kg Bag	12- 10 Ltr Can	16- Ox Cart	20- Big basin	

H22 If you had 10 roots representing all of your sweetpotato produced in 2015, how many of those roots would be white-fleshed, how many yellow-fleshed and how many orange-fleshed?

H22A ☐☐ white-fleshed **H22B** ☐☐ yellow-fleshed **H22C** ☐☐ orange-fleshed *Check for consistency with H10, H11, and H12!*

H22D If you had 10 roots representing all of your sweetpotato produced **3 years ago**, how many of those roots would be white-fleshed, how many yellow-fleshed and how many orange-fleshed?

H22D ☐☐ white-fleshed **H22E** ☐☐ yellow-fleshed **H22F** ☐☐ orange-fleshed

H. SWEETPOTATO PRODUCTION, SALES, AND CONSUMPTION, CONT.

VILL: ☐☐☐☐-☐☐ HHID: ☐☐

H23 How much of your sweetpotato production did you sell last year? 1- none at all 2- less then 10% 3- Between 10-25% 4- Between 25-50% 5- Half 6- 50-75% 7- greater than 75% 8-all ☐
If the response is 1, Leave H23A up to H24M

H23A *If H23 is NOT '1'* How much money was made from the sale of your SP production? ☐☐☐☐☐☐☐ Tsh

H23B If the household sold any sweetpotato, who made the decision for sale? 1- No input made by wife 2- Some input together with HHH (man) 3- Most input together with HHH 4- All input by woman 5- No decision made ☐

H23C Who decided the quantity to be sold? 1- No input made by woman 2- Some input together with HHH (man) 3- Most input together with HHH 4- All input by woman 5- No decision made ☐

H23D Who decided how the money from that sales of the sweetpotato is spent? 1- No input made by woman 2- Some input together with HHH (man) 3- Most input together with HHH 4- All input by woman 5- No decision made ☐

H24 Tell me the three most important ways that you spent the money that you earned from sweetpotato. ***(Put 1 when mentioned and 0 if not mentioned, and 99 if not applicable)***

H24a School fees	H24b Furniture	H24c Pay Hospital bill	H24d Pay rent	H24e Pay Dowry	H24f Leisure	H24g Land preparation	H24h Buy farm inputs	H24i Pay Loan	H24j HH food expenditure	H24l Non-food HH expenditure

H24l *If spent on HH food:* what type(s) of food(s) was/were this/these? *Use crop/food codes* ☐☐ ☐☐ ☐☐

H24m Others specify *Use other expenditure codes* _____ _____ _____

H25 Has your household changed the number of plots under sweetpotato production during the last two years? ..... **No. of Plots:** 1-Decreased 2- Same 3- Increased ☐

H25A *If the number of plots increased or decreased*: By how many? **No. of plots:** 0- No change 1- 1 plot 2- 2 plots 3- 3 plots 4- 4 plots 5- more than 4 plots ☐

H25B Now let's think of the area (space) covered by all of those plots. Did the area under sweetpotato increase, decrease, or stay the same compared to 2 years ago? **Area:** 1-Decreased 2- Same 3- Increased ☐
if H25B=2, Skip to H26A

H25C *If the area increased or decreased:* By what amount did it increase or decrease? **Area:** 1- 1/8th of an acre or less 2- 1/8th to 1/4 acre 3- between 1/4 and 1/2 acre 4- between 1/2 and 1 acre 5- between 1 & 2 acres 6- above 2 acres ☐

H25D *If increased:* Why did you decide to increase the area or number of plots planted? _____ ☐☐

H25E *If decreased:* Why did you decide to decrease the area or number of plots planted? _____ ☐☐

H26A Has there been any change in the amount of work your spouse (*child's father*) does in sweetpotato production or sales over the past two years? 0- No change 1- Decrease 2- Increase 8- Don't know ☐

H26B *If so,* Why? _____ ☐☐

H26C Has there been any change in the amount of work **you** do in sweetpotato production or sales over the past two years? 0- No change 1- Decrease 2- Increase 8- Don't know ☐

H26D *If so,* Why? _____ ☐☐

Now I would like to ask you questions about your total OFSP production

H27 **Of all the orange flesh sweetpotato you harvested in the past 12 months,**
How much did you sell? *1 -- all ; 2 -- more than half; 3 -- about half; 4 -- Half; 5-- less than half; 6--less than one quarter 7-none ; 8 - not sure / can't remember; 9- N/A* ☐
(If H27=7, then skip to S01)

H28 What did you earn from your sales of orange-fleshed sweetpotato in total during the past 12 months ☐☐☐☐☐☐☐☐☐ Tsh

H29 **Of all the orange flesh sweetpotato you harvested in the past 12 months,**
How much of this did your household consume? 1 -- all ; 2 -- more than half; 3 -- about half; 4 -- less than half; 5--less than one quarter 6-none ; 8 - not sure / can't remember; 9- N/A ☐

H30 How much did you share with others outside the household? Quantity ☐☐☐.☐☐ Unit: ☐☐
Use codes of H19 19- Other, specify _____ ☐☐

I. AGRICULTURE SEED SYSTEM AND VINE DIFFUSION

VILL: ☐☐☐☐-☐☐ HHID: ☐☐ **Pg. 11**

We would like to talk about availability, accessibility and movement of sweetpotato vines to and from your farm

I01 Respondent: FIRST NAME:_____ LAST NAME:_____ ID No ☐☐

I02 Where do you normally obtain sweetpotato vines from? (Please tick all that apply with a 1 and 0 otherwise)

1- Own farm ☐ 2- Male neighbour ☐ 3- Female neighbour ☐ 4- Relatives ☐ 5- Farmer group ☐ 6- Research institution ☐ 7- Trained vine multipliers far away ☐

8- NGO ☐ 9- Government ☐ 10. Trained vine multiplier nearby ☐ 11. Untrained vine multiplier ☐ 12. CHW ☐ 13- Other (specify)_____ ☐

I02A *If there is more than one source:* Which is the most important for you and your family? (use code number from I02) ..... ☐☐

I03 Can you please rate the quality of vines from the most important source mentioned above? 1. Excellent 2. Good 3. Average 4. Bad 5. Really bad 6. Don't Know ☐

I04 Did you buy or got the sweetpotato vines for free? 1. Free without voucher ☐ 2. Bought ☐ **I04B** If bought the amount paid in Tshs. ☐☐☐☐☐☐☐☐☐

I05 Estimate the amount of vines. ☐☐☐☐☐☐☐.☐☐☐ Unit code: 1. Small bundle 2. Medium bundle 3. Big bundle 4. 100 kg bag 5. Sack for 90kg maize 6. Cuttings ☐

I06 Do you know of any specialized SP vine multiplier (that is, someone who has been trained in SP vine multiplication for quality)? ..... 1- Yes 0- No ☐

I07 *If yes:* what is the name of the multiplier _____ 888- Don't know Code ☐☐☐

I08 In the last cropping year (2014/2015), did you or anyone in your household **give** SP vines for free to another person? ..... 1- Yes 0- No ☐

I09 In the last cropping year (2014/2015), did you or anyone in your household **sell** SP vines to another person? ..... 1- Yes 0- No ☐

(If No is the answer for the last two questions, please skip the table and move to the next page)

If anyone in your household gave out or sold any SP vines in 2014/2015 season please fill the table below

ID No.	Recipient	Gender of giver	Is the giver a specialized vine multiplier?	Is the receiver a farmer group member?	Is Receiver a relative	Total amount of SP vines exchanged		Variety		Did you sell the SP vines?	What is the total value of the SP Vines?	If you sold Who received the money?	Where was the recipient from	Time to get to vine receiver SP field	
											Value in Tsh				
	0- Woman 1- Man 2- NGO 3- F/Group	0- Woman 1- Man 2- Both	1- Yes 0- No	1- Yes 0- No	1-Yes 0. No	Qty	unit code	code #1	code #2	1- Yes 0- No *If I19=0, Skip to I23*		0- Woman 1- Man 2- Both 99 - N/A	1. same village 2. Other-Ward 3. Other-District 4. Other	(minutes)	Unit
I10	**I11**	**I12**	**I13**	**I14**	**I15**	**I16**	**I17**	**I18**		**I19**	**I20**	**I21**	**I22**	**I23**	**I24**

I17 Unit code: 1- Kg 2- Number in 30 cm long equivalent 3- Small bundle 4- Medium bundle 5- Big bundle 6- 90 kg sack 7- 50 Kg sack 8- Other (Specify)_____

I18 Codes: 1= Kabode 2= Mataya 3= Kakamega 4= Ejumula 5= Kiegea 6= other, orange-fleshed 7-other, yellow-fleshed 8-other, white-fleshed

I27 Unit codes (time to farm): 1. Walking 2. Bicycle 3. Motor bike 4. Vehicle

J. AGRICULTURE: SWEETPOTATO KNOWLEDGE AND PRACTICE; CONTINUED

VILL: ☐☐☐☐-☐☐ HHID ☐☐

J01 Do you plant sweetpotato several times during one season? 1- Yes 0- No ..... ☐

J02 If Yes, Why? (Please put a 1 if mentioned and a 0 if not mentioned)

1- Lack of planting material	☐	2- Cannot depend on rain	☐	3- Spread out production	☐	4- Lack of labour	☐
5- Different varieties have different maturing period	☐	6- To conserve planting materials	☐	7- Other (specify)	☐		

J03 Do you conserve SP vines during the dry period? 1- Yes 0- No ..... ☐

If No, Skip to J05

J04 If yes, what do you do to conserve the SP vines? *(Record response)* _____

(Please put a 1 if mentioned and 0 if not mentioned)

1- Plant vines in fenced lowlands area or swamp	☐	2- Plant vines in lowland/swamp area not fenced	☐
3- Keep vines in a small plot near the house and water them	☐	4- Keep the vines under the shade of other crops and water them	☐
5- Keep vines under shade of other crops and do not water	☐	7- Plant near a bathroom	☐
6- Do not harvest part of the existing field	☐	9- Other (specify)_____	☐
8- Buried roots	☐		

J05 If No, how do you get your SP vine material after a long dry period? _____

(Please put a 1 if mentioned and 0 if not mentioned)

1- Buy vines	☐	2- Borrow from neighbours	☐
3- Ask relatives for vines	☐	4- Left over roots re-sprouts in the field	☐

J06 Have you ever stored sweetpotato root whole and fresh after harvest? 1- Yes 0- No ..... ☐

J07 Do you ever dry sweetpotato roots for storage? 1- Yes 0- No ..... ☐

J08 Have you stopped growing any varieties in the **past 5 years**?

1- Yes 0- No ..... ☐

If J08= 0 (No), Skip to Next Section

J09 *If yes:* how many? ..... ☐☐

J10 *If yes:* what was the MAIN reasons you discontinued the variety (ies)?_____

_____ ☐☐

_____

_____

01- Poor Yields	02- Takes too long to mature	03- Not available
04- Low sugar content	05- Susceptible to pest/disease	06- Not marketable
07- Low in starch	08- New varieties available	09- Rots easily
10- Watery	11- Roots not fresh	12- Causes yellow fever
13- Prone to drought stress	14- Too fibrous	15 Tolerant to drought
16- Poor taste	17- Takes too long to cook	18- Matures too fast
19- Interferes with planting schedule for other crops		20- Causes diarrhoea
21- Just to have a change	22- Lack of enough food	23- Early maturity
24- A lot of vines, but no roots		
97- Need to post code	99- Missing	

K. AGRICULTURE -- SWEETPOTATO PREFERENCES AND PRACTICE

VILL: ☐☐☐☐-☐☐ HHID ☐☐

K01 ***I am going to read to you a list of traits about sweetpotato. Please tell me whether the characteristic is not important to you at all, or somewhat important when deciding what kinds of SP to grow in your farm.***

Desirable attribute	Relative importance 1- Likes the trait 2- Dislikes the trait 3- Not important
Planting characteristics	
1- Early maturing, that is the variety has some roots in less than 4 months	
2- Resists diseases	
3- High yielding	
4- Easy to establish when there is little rain	
5- Once it is growing it is easy to keep if the rains stop in the middle of the season	
6- Easy to conserve vines during the long dry period	
7- Vines spread out when they grow	
8- Gives lots of sweetpotato roots and lots of vines at the same time	
Post harvest	
9- Easy to store in the ground	
Cooking characteristics	
10- Cooks quickly	
11- Roots taste good	
12- Leaves taste good	
13- Very little sugar	
14- Very sugary	
15- Not watery	
Appearance	
16- Red skin	
17- White skin	
18- White fleshed	
19- Yellow fleshed	
20- Orange fleshed	

K02 What are the three most favourite varieties that you grow?
Which desirable characteristics do they have (use list under K01 for codes)

Name of variety	Variety Code	Skin Color (codes below)	Flesh Color (codes below)	Characteristics #1	#2	#3
	K02	**K03**	**K04**	**K05A**	**K05B**	**K05C**

Skin colors: 1- White 2- Cream 3- Red 4- Purplish 5- Brownish 6-Yellowish

Flesh colors: 1-White 2- Cream 3- Light Yellow 4- Deeper Yellow 5- Light Orange 6- Deeper Orange 7- Purple

Variety code: 1= Kabode 2= Mataya 3= Kakamega 4= Ejumula 5= Kiegea 6- Other SPECIFY **Be sure and fill in name of variety**

K03 Do you currently give SP leaves and vines to your livestock? 1- Yes 0- No 9- N/A ☐

K04 Do you sell sweetpotato leaves? ..... 1- Yes 0- No ☐

K05 Do you ever dry SP leaves for later consumption? ..... 1- Yes 0- No ☐

K06 Do you and your household consume sweetpotato leaves 1- Yes 0- No ☐

K06A *If Yes,* do you feed them to your young children 1- Yes 0- No 9- N/A ☐

L: HOUSEHOLD CHARACTERISTICS: HOUSEHOLD ASSETS

VILL: ☐☐☐☐-☐☐ HHID ☐☐

L01 At present, how much/many of the following does this household own that are usable/repairable?
(Instructions: For value per unit, ask how much they would pay for the asset if they have to buy it in its current state)

Asset	Quan-tity	Value per unit (Tshs)	If value per unit is unknown ask for total value	Owner 0- Woman 1- Man 2- Man & woman 3-Child 4- Other, SPECIFY	Asset	Quan-tity	Value per unit (Tshs)	If value per unit is unknown ask for total value	Owner 0- Woman 1- Man 2- Man & woman 3-Child 4- Other, SPECIFY
L01	L02	L03	L04	L05	L01	L02	L03	L04	L05
1- Storage facility for crop					20- Motorized water pump				
2- Water tank					21- Mechanical water pump				
3- Radio/ cassette player					22- Drip irrigation equip.				
4- TV					23- Other irrigation equip.				
5- Telephone/Mobile					24- Cart				
6- Solar panels					25- Plough				
7- Gas cooker					26- Harrow, tiller, ridger, weeder				
8- Bicycle					27- Motor cycle				
9- Wheelbarrow					28- Car/truck				
10- Milking equipment					29- Tractor				
11- Chaff cutter					30- Generator				
12- Sewing/knitting machine					31- Watering can				
13- Borehole or well					32- Axes				
14- Posho mill					33- Watch				
15- Sheller					34- Cows				
16- Other agro-processing equip.					35- Sheep				
17- Weighing machine					36- Goats				
18- Saw					37- Chicken (older ones)				
19- Spray pump (back pack)					38- Axes, rake, hoe				

L05B **Were any of the assets just named purchased with the help of funds raised by selling or bartering with sweetpotato?** **0- No 1-Yes 8- Don't know** ..... ☐

L05C *If Yes:* Please list the number of the assets here ☐☐ ☐☐ ☐☐ ☐☐ ☐☐

M: HOUSEHOLD CHARACTERISTICS: MAIN HOUSING, WATER, SANITATION

VILL: ☐☐☐☐-☐☐ HHID ☐☐

(Ask about the following)

M01 **What is the roofing material of the households' main house?**

1- Grass **2- Iron sheet** **3- Tiles** **4- Other (specify)** _____ ..... ☐

M02 What is the wall material of the main house?

1- Mud 2- Bricks/Stones 3- Iron sheets 4- Wood 5- Plastered 6- Other (specify) _____ ..... ☐

M03 **What is the floor material of the main house?**

1- Earth **2- Cement** **3- Wood** **4- Tiles** **5- Other (specify)** _____ ..... ☐

M04 Who owns the house?

1- Man of the house 2- Woman of the house 3- Jointly owned 4- Other HH member 5- Owned by non- resident relative 6- Rented 7- Other _____ ..... ☐

M05 **Does the household have their own toilet?**

1- Yes **0- No** ..... ☐

M06 What type of a toilet is it?

1- Pit latrine 2- Flush toilet 3- Compost or Eco-toilet 4- Outdoor unwalled 5- Other (specify)_____ ..... ☐

M07 **What is the MAIN source of your water during the wet season? *(Please note: Only ONE option should be mentioned)***

01- Pond **02- Dam/sand dam** **03- Lake** **04- Stream/river** **05- Unprotected spring** **06- Protected spring** **07- Well** **08- Borehole** **09- Water tank** ..... ☐☐

10- Roof catchment **11- Piped water into the compound** **12- Piped water outside the compound** **13- Water hawker-cart**

14- Boda-boda **15- Other (specify)** _____

M08 What is the distance (in Km OR minutes) to main source of water for domestic use during wet seasons? 1- Distance in minutes ☐☐ ***OR*** 2- Distance in Km ☐☐☐☐.☐☐

(Unit codes: 1=Walking, 2=by bicycle, 3=by car) Unit ☐ 9999.99=N/A

M09 **What is the MAIN source of water during the dry season? *(Please note: Only ONE option should be mentioned)***

01- Pond **02- Dam/sand dam** **03- Lake** **04- Stream/river** **05- Unprotected spring** **06- Protected spring** **07- Well** **08- Borehole** **09- Water tank** ..... ☐☐

10- Roof catchment **11- Piped water into the compound** **12- Piped water outside the compound** **13- Water hawker-cart**

14- Boda-boda **15- Other (specify)** _____

M10 What is the distance (in Km OR minutes) to main source of water for domestic use during dry seasons? 1- Distance in minutes ☐☐ ***OR*** 2- Distance in Km ☐☐☐☐.☐☐

(Unit codes: 1=Walking, 2=by bicycle, 3=by car) Unit ☐ 9999.99=N/A

M11 **What is the MAIN cooking fuel in this household? *(Please note: Only ONE option should be mentioned)***

1- Firewood **2- Charcoal** **3- Paraffin** **4- Solar power** **5- Biogas** **6- LPG Gas** **7- Electricity** **8- Animal dung** **9- Other (specify)** _____ ..... ☐

M12 What is your MAIN type of lighting in the main house? *(Please note: Only ONE option should be mentioned)*

1-Tin lamp 2- Lantern 3- Pressure lamp 4- Wood fuel 5- Solar power 6- Electricity 7- Rechargeable lamps 8- Other (specify) _____ ..... ☐

END TIME:

M13 ☐☐:☐☐

6.2 Consent Form

Written Consent for Respondent

Title

Baseline survey of orange-fleshed sweetpotato knowledge, farming and consumption and dietary practices among households with children aged 6-59 months in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania.

Investigators and institutional affiliations

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- Simon Heck, PhD, International Potato Centre, SSA.

Funding Source: **USAID**

If you are the legal guardian of a child who is being asked to participate, the term "you" used in this consent refers to you and your household.

Introduction

You and your household are being asked to be in a research study. This form is designed to let you know everything you need to think about before you decide to consent (agree) to be in the study or otherwise. The decision you make is **entirely your personal choice. If you decide to take part, you are still at liberty to change your mind later on and withdraw from the research study. You can skip any questions or procedures that you do not wish to answer or complete, respectively.**

Before making your decision:

- Please read this form carefully or have it read to you
- Please ask questions about anything that is not understood.

You can take and keep a copy of this consent form. Take your time thinking about whether you would like to participate. By signing this consent form you will not give up any of your rights.

Study Overview

We are here today to ask you and your household to be part of a research study. This study will help us understand the kind of crops you grow. It will also help us understand the foods you are eating in your home. This is because we are working closely with your local agriculture and nutrition extension offices. I am talking to you because organizations that work in agriculture and nutrition want to help you use the foods you already grow so that you eat better. We are very interested in sweet potato. Some of the new kinds of sweet potato have vitamins needed to make you healthy.

The information we learn will help your country and others to teach farmers on better farming practices to improve sweetpotato production.
The agricultural organizations implementing this survey are:

- the International Potato Center(known as **CIP**)
- the Sugarcane Research Institute at Kibaha (known as **SRI KIBAHA**)
- the Agriculture Research Institute at Uyole (known as **ARI UYOLE**)
- the Sokoine University of Agriculture (known as **SUA**)
- the local government extension service for agriculture and health/nutrition

Procedures

The districts of Gairo and Ulanga (in Morogoro region), Mufindi and Iringa DC (in Iringa region), Waging'ombe (Njombe region) and, Chunya and Mbozi (in Mbeya region) are part of this project. Your village has been chosen for this study. Scientists made sure that each village in the district had a fair chance of being chosen based on the number of people living in the village. We are interested in interviewing households with young children. Because your household has a young child you qualify to be part of this study. We would very much like you to agree to be a part of it.
If you agree to be part of this study, we will be asking you questions here in your house. You will spend about 45 minutes with the researchers.

Benefits, Risks and Discomforts

This study is not designed to benefit you directly; however the information we obtain will help improve the agricultural and nutrition support you receive from extension officers.
We do not think there will be any risk to you when you are part of the study. It is unlikely that others will find out what you have said during the interview and we will take measures to keep the information you share private and secure.

Compensation

You will not be offered any payment at all for being in this study. Your household will however be provided with vines from a local farmer group that is multiplying and conserving OFSP vines in your community. Your village extension officer will additionally provide you with information on how to improve your production of the sweetpotato vines you will receive.

Confidentiality

You will be alone when interviewed; other women will not hear your answers when you are interviewed. A study number rather than your name will be used for study records. We will not show or use your name or the name of any of your household members provided or any other information that may identify you or any of your household members in any way when we share the results. We will be reporting results for the whole community or district, and not for each person. Our team will keep the information you provide for at least five years.

Voluntary Participation and Withdrawal from the Study

Please feel free to ask us any questions. Your decision for you and your household to be part of the study is voluntary. You have the choice to answer or skip any question during the interview. You and your household may leave the study at any time and decline to do any part of the survey at any point without anything happening to you and you will still have access to agricultural extension services.

Contact Information

If you join the study, and later on you have questions or problems because of the questions we ask you, please contact the person leading this study, Dr. Frederick Grant, VISTA Tanzania office, Tushikamane Centre, Kilakala Road, near Toyota (T) Morogoro, P.O. Box 2473, Tel: 0759 184 827 (email: f.grant@cgiar.org).

Consent

Your signature on this form means that you understand what we have said and that you agree to be part of the study with your child.

First Name: _____ Last Name: _____

Mother or Guardian's statement and Signature:

[ ] The study has been explained to me. The consent form has been read to me, and my questions have been answered to my satisfaction. I understand taking part is voluntary. **I agree** for me and my household to take part in this study. I have received a copy of this form.

Signature: _____ Date____/_____/2015

_____

Or if the respondent cannot read: Participant's thumbprint

and Witness' signature: _____ Date____/_____/2015

_____

Name of enumerator: _____

Signature of enumerator: _____ Date____/_____/2015

6.5 Detailed results

Table 1: Socio Demographic Characteristics of Baseline survey Participants and Households of OFSP knowledge, farming and consumption and dietary practices in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania										
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**
Respondent Sample Size (%)		549	65 (11.8)	55 (10.0)	88(16.0)	77 (14.0)	55 (10.0)	99 (18.0)	110 (20.0)	
Age of caregiver – Median[IQR[3]]		30 [24 – 37]	31 [25 – 38]	29 [24 – 33]	30 [24 – 38]	29 [23 – 37]	33 [25 – 41]	29 [24 – 37]	29 [23 – 37]	0.3
Age of Head of Household – Median[IQR[3]]		36 [30 – 44]	40 [32 – 45]	36 [29 – 43]	35 [31 – 45]	33 [28 – 43]	40 [33 – 47]	36 [30 – 43]	39 [30 – 45]	0.3
Caregiver Education Status										
	No Schooling	57 (10.4)	4 (6.2)	3 (5.5)	11 (12.5)	5 (6.5)	4 (7.3)	18 (18.2)	12 (10.9)	0.4
	At least Primary	430 (78.3)	54 (83.1)	43 (78.2)	66 (75.0)	63 (81.8)	43 (78.2)	74 (74.8)	87 (79.1)	
	At least Secondary	59 (10.8)	6 (9.2)	8 (14.6)	11 (12.5)	9 (11.7)	8 (15.6)	7 (7.1)	10 (9.1)	
	College or University	3 (0.6)	1 (1.5)	1 (1.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.9)	
Head of Household Education Status										
	No Schooling	57 (10.4)	5 (7.7)	4 (7.3)	12 (13.6)	5 (6.5)	2 (3.6)	26 (26.3)	3 (2.7)	<0.001
	At least Primary	422 (76.9)	56 (86.2)	39 (70.9)	65 (73.9)	55 (71.4)	50 (90.9)	66 (66.7)	91 (82.7)	
	At least Secondary	59 (10.8)	4 (6.2)	9 (16.4)	10 (11.4)	13 (16.9)	2 (3.6)	6 (6.1)	15 (13.6)	
	College or University	11 (2.0)	0 (0.0)	3 (5.5)	1 (1.1)	4 (5.2)	1 (1.8)	1 (1.0)	1 (0.9)	
Status of Head of Household										
	Man	469 (85.4)	55 (84.6)	48 (87.3)	78 (88.6)	72 (93.5)	46 (83.6)	78 (78.8)	92 (83.6)	0.2
	Woman	80 (14.6)	10 (15.4)	7 (12.7)	10 (11.4)	5 (6.5)	9 (16.4)	21 (21.2)	18 (16.4)	
Ownership of Cell Phone										
	Respondent	230 (41.9)	35 (53.9)	24 (43.6)	23 (26.1)	33 (42.9)	32 (58.2)	37 (37.4)	46 (41.8)	<0.001
	Household Member	195 (35.5)	21 (32.3)	21 (38.2)	35 (39.8)	31 (40.3)	11 (20.0)	40 (40.4)	36 (32.7)	
	Neighbour / Other	106 (19.3)	7 (10.8)	9 (16.4)	22 (25.0)	13 (16.9)	5 (9.1)	22 (22.2)	28 (25.5)	
	No Cell phone	18 (3.3)	2 (3.1)	1 (1.8)	8 (9.1)	0 (0.0)	7 (12.7)	0 (0.0)	0 (0.0)	
Household Sample Size (%)										
	>= 5 Years	2,292 (77.0)	256 (74.0)	205 (74.8)	377 (77.3)	318 (77.8)	231 (77.3)	455 (77.8)	450 (66.5)	
	< 5 Years	686 (23.0)	90 (26.0)	69 (25.2)	111 (22.7)	91 (22.2)	68 (22.7)	130 (22.2)	127 (33.5)	
Household Size-Median[IQR[3]]		3 [2 - 5]	3 [2 - 5]	3 [2 - 4]	3 [2 - 5]	3 [2 - 5]	3 [2 - 5]	3 [2 - 5]	3 [2 - 5]	0.2
Sex of Members >= 5 years										
	Female	1,207 (52.7)	139 (54.3)	116 (56.6)	192 (50.9)	174 (54.7)	114 (49.4)	231 (50.8)	241 (53.6)	0.6
	Male	1,085 (47.3)	117 (45.7)	89 (43.4)	185 (49.1)	144 (45.3)	117 (50.7)	224 (49.2)	209 (46.4)	

Table 1: Socio Demographic Characteristics of Baseline survey Participants and Households of OFSP knowledge, farming and consumption and dietary practices in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania									
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**
Sex of Members < 5 years										
	Female	351 (51.2)	44 (48.9)	35 (50.7)	50 (45.1)	54 (59.3)	39 (57.4)	65 (50.0)	64 (50.4)	0.5
	Male	335 (48.8)	46 (51.1)	34 (49.3)	61 (55.0)	37 (40.7)	29 (42.7)	65 (50.0)	63 (49.6)	
Average age (Years) of Members >= 5 -Median[IQR[3]]		20 [10 - 32]	23 [11 - 36]	23 [11 - 33]	19 [10 - 31]	18 [10 - 29]	19 [10 - 33]	18 [10 - 31]	21 [11 - 33]	0.02
Average age (Months) of Members < 5 - Median[IQR[3]]		28 [16 - 41]	30 [19 - 48]	25 [14 – 38]	27 [14 - 39]	28 [16 - 39]	28 [15.5 - 44]	29.5 [14 - 40]	24 [15 - 38]	0.8
Household Education Status										
	No Schooling	446 (19.5)	35 (13.7)	26 (12.7)	65 (17.4)	39 (12.3)	39 (17.1)	156 (34.4)	86 (19.1)	
	At least Primary	1,566 (68.6)	193 (75.4)	145 (70.7)	260 (69.5)	231 (72.9)	155 (68.0)	272 (60.0)	310 (68.9)	<0.001
	At least Secondary	251 (11.0)	25 (9.8)	30 (14.7)	46 (12.3)	43 (13.6)	32 (14.0)	24 (5.3)	51 (11.3)	
	College or University	20 (0.9)	3 (1.2)	4 (2.0)	3 (0.8)	4 (1.3)	2 (0.9)	1 (0.2)	3 (0.7)	
Household grow SP										
	No	781 (54.6)	153 (81.0)	89 (61.8)	83 (37.9)	49 (25.1)	45 (34.4)	148 (55.4)	214 (74.8)	<0.001
	Yes	650 (45.4)	36 (19.1)	55 (38.2)	136 (62.1)	146 (74.9)	86 (65.7)	119 (44.6)	72 (25.2)	
Household Agriculture status										
	Principal	1,224 (88.8)	158 (85.4)	119 (85.0)	191 (88.8)	170 (87.2)	93 (75.0)	250 (97.7)	243 (92.4)	<0.001
	Secondary	154 (11.2)	27 (14.6)	21 (15.0)	24 (11.2)	25 (12.8)	31 (25.0)	6 (2.3)	20 (7.6)	
Sold agricultural products since 2015										<0.001
	No	850 (59.7)	104 (55.3)	78 (54.9)	130 (59.4)	85 (43.8)	70 (53.4)	189 (71.3)	194 (68.3)	
	Yes	573 (40.3)	84 (44.7)	64 (45.1)	89 (40.6)	109 (56.2)	61 (46.6)	76 (28.7)	90 (31.7)	
Undertaken salaried employment since 2015										<0.001
	No	1,376 (96.4)	185 (97.9)	120 (84.5)	212 (96.8)	191 (98.5)	127 (97.0)	265 (98.9)	276 (96.8)	
	Yes	52 (3.6)	4 (2.1)	22 (15.5)	7 (3.2)	3 (1.6)	4 (3.1)	3 (1.1)	9 (3.2)	
Done casual labour since 2015										<0.001
	No	979 (68.6)	127 (67.2)	89 (62.7)	187 (85.4)	142 (73.2)	86 (65.7)	159 (59.3)	189 (66.3)	
	Yes	449 (31.4)	62 (32.8)	53 (37.3)	32 (14.6)	52 (26.8)	45 (34.4)	109 (40.7)	96 (33.7)	
Involved in informal business since 2015										0.07
	No	1,144 (80.1)	159 (84.1)	123 (86.6)	164 (74.9)	150 (77.3)	109 (82.6)	209 (78.0)	230 (80.7)	
	Yes	285 (19.9)	30 (15.9)	19 (13.4)	55 (25.1)	44 (22.7)	23 (17.4)	59 (22.0)	55 (19.3)	
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**

Table 1: Socio Demographic Characteristics of Baseline survey Participants and Households of OFSP knowledge, farming and consumption and dietary practices in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania										
Self-employment since 2015										
	No	1,216 (85.3)	146 (77.3)	103 (72.5)	193 (88.1)	168 (86.6)	113 (86.3)	250 (93.3)	243 (85.9)	<0.001
	Yes	210 (14.7)	43 (22.8)	39 (27.5)	26 (11.9)	26 (13.4)	18 (13.7)	18 (6.7)	40 (14.1)	

[1] – The percentages represent column percentages

[2] - Pearson's chi-squared for proportions and nonparametric equality-of-medians test for averages

[3] – Inter-Quartile Range

Table 2: Household and Young Child Dietary Diversity Score of Baseline Survey Participants in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania										
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**
Household Diversity Score										
	Low	184 (33.5)	17 (26.2)	10 (18.2)	23 (26.1)	17 (22.1)	21 (38.2)	51 (51.5)	45 (40.9)	<0.001
	Medium	165 (30.1)	18 (27.7)	16 (29.1)	32 (36.4)	24 (31.2)	20 (36.4)	28 (28.3)	27 (24.6)	
	High	200 (36.4)	30 (46.2)	29 (52.7)	33 (37.5)	36 (46.8)	14 (25.5)	20 (20.2)	38 (34.6)	
Young Child Diversity Score										
	Low	175 (31.9)	18 (27.7)	11 (20.0)	32 (36.4)	14 (18.2)	22 (40.0)	43 (43.4)	35 (31.8)	0.005
	Medium	171 (31.2)	19 (29.2)	15 (27.3)	26 (29.6)	25 (32.5)	16 (29.1)	34 (34.3)	36 (32.7)	
	High	203 (37.0)	28 (43.1)	29 (52.7)	30 (34.1)	38 (49.4)	17 (30.9)	22 (22.2)	39 (35.5)	
Household ate OFSP in the last 24 hours										
	No	547 (99.6)	64 (98.5)	55 (100.0)	88 (100.0)	77 (100.0)	55 (100.0)	98 (99.0)	110 (100.0)	0.5
	Yes	2 (0.4)	1 (1.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.0)	0 (0.0)	
Child ate OFSP in the last 24 hours										
	No	547 (99.6)	64 (98.5)	55 (100.0)	88 (100.0)	77 (100.0)	55 (100.0)	98 (99.0)	110 (100.0)	0.5
	Yes	2 (0.4)	1 (1.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.0)	0 (0.0)	
Source of OFSP consumed										
	Personal field	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0.2
	Market	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
	Relative / Neighbour	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
	Other	1 (50.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	

[1] – The percentages represent column percentages

[2] - Pearson's chi-squared for proportions

Table 3: Household Food Insecurity Access Scale (HFIAS) Score of Baseline Survey Participants in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania										
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**
HFIAS Score										
	Low	178 (32.4)	24 (36.9)	22 (40.0)	28 (31.8)	34 (44.2)	17 (30.9)	19 (19.2)	34 (30.9)	0.005
	Medium	184 (33.5)	20 (30.8)	17 (30.9)	34 (38.6)	27 (35.1)	22 (40.0)	28 (28.3)	36 (32.7)	
	High	187 (34.1)	21 (32.3)	16 (29.1)	26 (29.6)	16 (20.8)	16 (29.1)	52 (52.5)	40 (36.4)	
Months consumed SP in meals at least twice a week										
	January	11 (0.7)	0 (0.0)	2(1.4)	0 (0.0)	4 (1.5)	2 (1.4)	2 (0.7)	1 (0.4)	
	February	31 (1.9)	3 (1.9)	4 (2.8)	2 (0.7)	11 (4.0)	4 (2.7)	4 (1.3)	3 (1.1)	
	March	80 (5.0)	6 (3.7)	6 (4.2)	20 (6.6)	29 (10.6)	11 (7.5)	4 (1.3)	4 (1.4)	
	April	153 (9.5)	16 (9.9)	11 (7.7)	41 (13.6)	37 (13.5)	23 (15.8)	17 (5.6)	8 (2.8)	
	May	**207 (12.8)**	19 (11.7)	16 (11.2)	**53 (17.6)**	**43 (15.6)**	**24 (16.4)**	33 (10.8)	19 (6.7)	
	June	**351 (21.7)**	**29 (17.9)**	**36 (25.2)**	**62 (20.5)**	**51 (18.6)**	**30 (20.6)**	**71 (23.3)**	**72 (25.5)**	< 0.001
	July	**326 (20.2)**	**24 (14.8)**	**29 (20.3)**	**57 (18.9)**	**42 (15.3)**	**23 (15.8)**	**72 (23.6)**	**79 (28.0)**	
	August	216 (13.4)	**24 (14.8)**	**19 (13.3)**	40 (13.3)	21 (7.6)	15 (10.3)	**49 (16.1)**	**48 (17.0)**	
	September	120 (7.4)	19 (11.7)	9 (6.3)	17 (5.6)	15 (5.5)	4 (2.7)	31 (10.2)	25 (8.9)	
	October	73 (4.5)	12 (7.4)	6 (4.2)	8 (2.7)	12 (4.4)	4 (2.7)	17 (5.6)	14 (5.0)	
	November	27 (1.7)	8 (4.9)	3 (2.1)	1 (0.3)	6 (2.2)	3 (2.1)	3 (1.0)	3 (1.1)	
	December	20 (1.2)	2 (1.2)	2 (1.4)	1 (0.3)	4 (1.5)	3 (2.1)	2 (0.7)	6 (2.1)	
Had less than two meals a day from own resources in past 12 months										
	January	**108 (15.5)**	**5 (9.1)**	**7 (14.9)**	10 (8.2)	**18 (20.5)**	**5 (9.8)**	**34 (19.2)**	**29 (18.2)**	
	February	**128 (18.3)**	**9 (16.4)**	**8 (17.0)**	23 (18.9)	**15 (17.1)**	**9 (17.7)**	**31 (17.5)**	**33 (20.8)**	
	March	69 (9.9)	**9 (16.4)**	**8 (17.0)**	9 (7.4)	5 (5.7)	**4 (7.8)**	11 (6.2)	**23 (14.5)**	
	April	34 (4.9)	4 (7.3)	6 (12.8)	1 (0.8)	3 (3.4)	7 (13.7)	4 (2.3)	9 (5.7)	
	May	22 (3.2)	3 (5.5)	2 (4.3)	6 (4.9)	2 (2.3)	4 (7.8)	3 (1.7)	2 (1.3)	
	June	33 (4.7)	0 (0.0)	2 (4.3)	**13 (10.7)**	6 (6.8)	4 (7.8)	5 (2.8)	3 (1.9)	0.003
	July	41 (5.9)	2 (3.6)	4 (8.5)	**13 (10.7)**	7 (8.0)	7 (13.7)	5 (2.8)	3 (1.9)	
	August	31 (4.4)	1 (1.8)	2 (4.3)	**11 (35.5)**	4 (4.6)	3 (5.9)	6 (3.4)	4 (2.5)	
	September	42 (6.0)	4 (7.3)	1 (2.1)	9 (7.4)	7 (8.0)	0 (0.0)	12 (7.8)	9 (5.7)	
	October	52 (7.4)	8 (14.6)	3 (6.4)	8 (6.6)	3 (3.4)	3 (5.9)	16 (9.0)	11 (6.9)	
	November	50 (7.2)	6 (10.9)	1 (2.1)	7 (5.7)	7 (8.0)	1(2.0)	18 (10.2)	10 (6.3)	
	December	**89 (12.7)**	4 (7.3)	3 (6.4)	12 (9.8)	**11(12.5)**	4 (7.8)	**32 (18.1)**	23 (14.5)	

Table 3: Household Food Insecurity Access Scale (HFIAS) Score of Baseline Survey Participants in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania										
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**
Received relief food or food from an external source										
	January	7 (10.5)	1 (25.0)	1 (6.3)		1 (100.0)	1 (20.0)	2 (10.0)	1 (4.8)	
	February	6 (9.0)	0 (0.0)	1 (6.3)		0 (0.0)	2 (40.0)	0 (0.0)	3 (14.3)	
	March	6 (9.0)	0 (0.0)	2 (12.5)		0 (0.0)	0 (0.0)	0 (0.0)	4 (19.1)	
	April	5 (7.5)	1 (25.0)	1 (6.3)		0 (0.0)	0 (0.0)	2 (10.0)	1 (4.8)	
	May	2 (3.0)	0 (0.0)	1 (6.3)		0 (0.0)	0 (0.0)	0 (0.0)	1 (4.8)	
	June	3 (4.5)	0 (0.0)	1 (6.3)		0 (0.0)	0 (0.0)	2 (10.0)	0 (0.0)	0.5
	July	5 (7.5)	0 (0.0)	1 (6.3)		0 (0.0)	1 (20.0)	2 (10.0)	1 (4.8)	
	August	**7 (10.5)**	1 (25.0)	2 (12.5)		0 (0.0)	0 (0.0)	3 (15.0)	1 (4.8)	
	September	**8 (11.9)**	0 (0.0)	2 (12.5)		0 (0.0)	0 (0.0)	3 (15.0)	3 (14.3)	
	October	**12 (17.9)**	1 (25.0)	2 (12.5)		0 (0.0)	0 (0.0)	5 (25.0)	4 (19.1)	
	November	2 (3.0)	0 (0.0)	1 (6.3)		0 (0.0)	0 (0.0)	0 (0.0)	1 (4.8)	
	December	4 (6.0)	0 (0.0)	1 (6.3)		0 (0.0)	1 (20.0)	1 (5.0)	1 (4.8)	

[1] – The percentages represent column percentages

[2] - Pearson's chi-squared for proportions

Table 4: Vitamin A Knowledge Score of Baseline Survey Participants in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania										
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**
Vitamin A Knowledge Score										
	Low	214 (39.0)	32 (49.2)	14 (25.5)	37 (42.1)	22 (28.6)	18 (32.7)	45 (45.5)	46 (41.8)	0.005
	Medium	227 (41.4)	25 (38.5)	26 (47.3)	30 (34.1)	32 (41.6)	23 (41.8)	47 (47.5)	44 (40.0)	
	High	108 (19.7)	8 (12.3)	15 (27.3)	21 (23.9)	23 (29.9)	14 (25.5)	7 (7.1)	20 (18.2)	
The most common Sources of Vitamin A knowledge										
	Health Unit	330 (44.8)	41 (47.7)	27 (31.0)	47 (44.3)	42 (41.2)	32 (46.4)	62 (46.6)	79 (51.6)	< 0.001
	School	198 (26.9)	17 (19.8)	20 (23.0)	32 (30.2)	41 (40.2)	22 (31.9)	37 (27.8)	29 (19.0)	
	CHWs / Extension Officers	97 (13.2)	10 (11.6)	20 (23.0)	13 (12.3)	10 (9.8)	12 (17.4)	14 (10.5)	18 (11.8)	
Listened to radio past month										
	Every day or at least weekly	268 (50.8)	25 (38.5)	36 (65.5)	49 (57.0)	25 (32.9)	28 (52.8)	49 (52.1)	56 (56.6)	< 0.001
	Irregularly	85 (16.1)	12 (18.5)	5 (9.1)	5 (5.8)	17 (22.4)	2 (3.8)	18 (19.2)	26 (26.3)	
	Did not listen	175 (33.1)	28 (43.1)	14 (25.5)	32 (37.2)	34 (44.7)	23 (43.4)	27 (28.7)	17 (17.2)	
Heard anything about OFSP on the radio past year										
	No	368 (78.5)	51 (83.6)	35 (66.0)	43 (71.7)	37 (75.5)	34 (79.1)	81 (86.2)	87 (79.8)	0.09
	Yes	101 (21.5)	10 (16.4)	18 (34.0)	17 (28.3)	12 (24.5)	9 (20.9)	13 (13.8)	22 (20.2)	
Heard anything about OFSP on the TV past year										
	No	438 (97.6)	63 (100.0)	47 (90.4)	52 (94.6)	39 (97.5)	39 (97.5)	90 (100.0)	108 (99.1)	0.006
	Yes	11 (2.5)	0 (0.0)	5 (9.6)	3 (5.5)	1 (2.5)	1 (2.5)	0 (0.0)	1 (0.9)	

[1] – The percentages represent column percentages

[2] - Pearson's chi-squared for proportions

Table 5: Vitamin A Intake of Baseline Survey Participants in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania										
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**
Child Vitamin A intake (Overall)										
	Less or equal to 6	461 (84.0)	51 (78.5)	46 (83.6)	77 (87.5)	72 (93.5)	45 (81.8)	80 (80.8)	90 (81.8)	0.2
	Above 6	88 (16.0)	14 (21.5)	9 (16.4)	11 (12.5)	5 (6.5)	10 (18.2)	19 (19.2)	20 (18.2)	
Animal source VA intake by child										
	Less or equal to 4	480 (87.4)	55 (84.6)	50 (90.9)	81 (92.1)	74 96.14)	46 (83.6)	82 (82.8)	92 (83.6)	0.06
	Above 4	69 (12.6)	10 (15.4)	5 (9.1)	7 (8.0)	3 3.94)	9 (16.4)	17 (17.2)	18 (16.4)	
Caregiver Vitamin A intake (Overall)										
	Less or equal to 6	456 (83.1)	51 (78.5)	46 (83.6)	76 (86.4)	71 (92.2)	44 (80.0)	80 (80.8)	88 (80.0)	0.3
	Above 6	93 (16.9)	14 (21.5)	9 (16.4)	12 (13.6)	6 (7.8)	11 (20.0)	19 (19.2)	22 (20.0)	
Animal source VA intake by Caregiver										
	Less or equal to 4	480 (87.4)	55 (84.6)	51 (92.7)	80 (90.9)	74 (96.1)	47 (85.5)	82 (82.8)	91 (82.7)	0.05
	Above 4	69 (12.6)	10 (15.4)	4 (7.3)	8 (9.1)	3 (3.9)	8 (14.6)	17 (17.2)	19 (17.3)	
Source of eaten sweet potato										
	Own Field	42 (42.9)	5 (29.4)	9 (40.9)	2 (40.0)	3 (25.0)	16 (76.2)	2 (25.0)	5 (38.5)	
	Market	50 (51.0)	10 (58.8)	13 (59.1)	3 (60.0)	7 (58.3)	4 (19.1)	5 (62.5)	8 (61.5)	0.2
	Relative / Neighbour	5 (5.1)	1 (5.9)	0 (0.0)	0 (0.0)	2 (16.7)	1 (4.8)	1 (12.5)	0 (0.0)	
	Other	1 (1.0)	1 (5.9)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
On day child consumed SP, it was for:										
	Breakfast	83 (80.6)	14 (73.7)	17 (77.3)	5 (62.5)	12 (100.0)	18 (85.7)	5 (62.5)	12 (92.3)	
	Snack	10 (9.7)	2 (10.5)	3 (13.6)	1 (12.5)	0 (0.0)	2 (9.5)	1 (12.5)	1 (7.7)	0.06
	Lunch	5 (4.9)	1 (5.3)	2 (9.1)	1 (12.5)	0 (0.0)	1 (4.8)	0 (0.0)	0 (0.0)	
	Supper / Dinner	5 (4.9)	2 (10.5)	0 (0.0)	1 (12.5)	0 (0.0)	0 (0.0)	2 (25.0)	0 (0.0)	
On day caretaker consumed SP, it was for:										
	Breakfast	86 (83.5)	14 (73.7)	17 (70.8)	5 (100.0)	12 (100.0)	20 (95.2)	6 (66.7)	12 (92.3)	
	Snack	7 (6.8)	2 (10.5)	3 (12.5)	0 (0.0)	0 (0.0)	0 (0.0)	1 (11.1)	1 (7.7)	0.4
	Lunch	5 (4.9)	1 (5.3)	3 (12.5)	0 (0.0)	0 (0.0)	1 (4.8)	0 (0.0)	0 (0.0)	
	Supper / Dinner	5 (4.9)	2 (10.5)	1 (4.2)	0 (0.0)	0 (0.0)	0 (0.0)	2 (22.2)	0 (0.0)	

[1] – The percentages represent column percentages

[2] - Pearson's chi-squared for proportions

Table 6: Agriculture Crop Production of Baseline Survey Participants in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania										
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**
Total acres cultivated in 2014/2015 year – Median[IQR[3]]		4.0 [2.5 – 5.0]	5.0 [4.0 – 6.5]	2.5 [1.8 – 4.0]	2.6 [1.2 – 5.5]	2.8 [2.0 – 3.6]	3.0 [2.0 – 4.0]	5.0 [3.0 – 6.0]	5.0 [3.0 – 5.9]	0.01
	Uplands	2.0 [1.2 – 4.0]	2.5 [2.0 – 3.0]	1.6 [1.0 – 2.0]	2.0 [1.0 – 4.0]	1.0 [1.0 – 3.0]	1.3 [1.0 – 2.0]	2.5 [2.0 – 4.0]	3.0 [2.0 – 4.0]	0.001
	Lowlands	2.0 [1.0 – 3.0]	2.0 [1.0 – 3.0]	1.0 [1.0 – 2.0]	3.0 [2.0 – 5.0]	2.0 [1.5 – 3.0]	2.0 [1.2 – 3.0]	3.0 [1.5 – 4.0]	2.0 [1.0 – 3.0]	< 0.001
Most produced crops in 2014/2015 by households?										
	Maize	477 (30.8)	39 (28.5)	54 (34.8)	84 (30.7)	74 (22.1)	55 (25.0)	98 (51.3)	73 (30.9)	< 0.001
	Beans	272 (17.6)	20 (14.6)	43 (27.7)	48 (17.5)	71 (21.2)	49 (22.3)	26 (13.6)	15 (6.4)	
	Sweet Potato	255 (16.5)	16 (11.7)	21 (13.6)	53 (19.3)	58 (17.3)	42 (19.1)	36 (18.9)	29 (12.3)	
	Groundnuts	148 (9.6)	13 (9.5)	11 (7.1)	39 (14.2)	61 (18.2)	12 (5.5)	8 (4.2)	4 (1.7)	
	Rice	135 (8.7)	28 (20.4)	0 (0.0)	20 (7.3)	1 (0.3)	0 (0.0)	2 (1.1)	84 (35.6)	
	Bananas	108 (7.0)	7 (5.1)	9 (5.8)	13 (4.7)	45 (13.4)	16 (7.3)	2 (1.1)	16 (6.8)	
	Cassava	88 (5.7)	6 (4.4)	9 (5.8)	10 (3.7)	18 (5.4)	24 (10.9)	9 (4.7)	12 (5.1)	
	Sugarcane	46 (3.0)	5 (3.7)	7 (4.5)	3 (1.1)	4 (1.2)	22 (10.0)	3 (1.6)	2 (0.9)	
	Sorghum	19 (1.2)	3 (2.2)	1 (0.7)	4 (1.5)	3 (0.9)	0 (0.0)	7 (3.7)	1 (0.4)	
Most sold crops in 2014 / 2015 by households??										
	Maize	163 (30.4)	11 (22.0)	18 (36.7)	28 (40.6)	25 (21.9)	36 (35.3)	23 (35.9)	22 (25.0)	< 0.001
	Beans	101 (18.8)	4 (8.0)	16 (32.7)	7 (10.1)	25 (21.9)	28 (27.5)	13 (20.3)	8 (9.1)	
	Rice	68 (12.7)	18 (36.0)	0 (0.0)	11 (15.9)	0 (0.0)	0 (0.0)	0 (0.0)	39 (44.3)	
	Sweet Potato	58 (10.8)	4 (8.0)	3 (6.1)	8 (11.6)	11 (9.7)	8 (7.8)	18 (28.1)	6 (6.8)	
	Groundnuts	54 (10.1)	6 (12.0)	2 (4.1)	11 (15.9)	28 (24.6)	6 (5.9)	1 (1.6)	0 (0.0)	
	Bananas	34 (6.3)	3 (6.0)	3 (6.1)	3 (4.4)	18 (15.8)	2 (2.0)	0 (0.0)	5 (5.7)	
	Cassava	27 (5.0)	0 (0.0)	2 (4.1)	0 (0.0)	5 (4.4)	12 (11.8)	2 (3.1)	6 (6.8)	
	Sugarcane	22 (4.1)	2 (4.0)	4 (8.2)	1 (1.5)	2 (1.8)	10 (9.8)	2 (3.1)	1 (1.1)	
	Sorghum	9 (1.7)	2 (4.0)	1 (2.0)	0 (0.0)	0 (0.0)	0 (0.0)	5 (7.8)	1 (1.1)	

[1] – The percentages represent column percentages

[2] - Pearson's chi-squared for proportions and nonparametric equality-of-medians test for averages

[3] – Inter-Quartile Range

Table 7: Sweetpotato Production, Sales, and Consumption of Baseline Survey Participants in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania										
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**
Growing Sweet Potato in 2014/2015 year										
	No	291 (53.0)	49 (75.4)	34 (61.8)	34 (38.6)	19 (24.7)	13 (23.6)	61 (61.6)	81 (73.6)	< 0.001
	Yes	258 (47.0)	16 (24.6)	21 (38.2)	54 (61.4)	58 (75.3)	42 (76.4)	38 (38.4)	29 (26.4)	
Average number of sweet potato plots – Median[IQR[3]]		0 [1 - 1]	0 [0 - 0]	0 [0 - 1]	1 [0 -1]	1 [1 - 1]	1 [1 - 1]	0 [0 - 1]	0 [0 - 1]	< 0.001
Ask spouse or someone else for permission to use land?										0.001
	No	171 (68.4)	14 (93.3)	16 (76.2)	25 (48.1)	40 (70.2)	33 (80.5)	21 (56.8)	22 (81.5)	
	Yes	79 (31.6)	1 (6.7)	5 (23.8)	27 (51.9)	17 (29.8)	8 (19.5)	16 (43.2)	5 (18.5)	
Who decides how much to grow of the sweet potato?										0.001
	Husband	41 (16.0)	2 (12.5)	2 (9.5)	18 (34.6)	5 (8.6)	4 (9.5)	6 (15.8)	4 (13.8)	
	Wife	78 (30.5)	6 (37.5)	8 (38.1)	9 (17.3)	14 (24.1)	23 (54.8)	11 (29.0)	7 (24.1)	
	Both	137 (53.5)	8 (50.0)	11 (52.4)	25 (48.1)	39 (67.2)	15 (35.7)	21 (55.3)	18 (62.1)	
Planting styles										0.005
	Ridges	230 (85.8)	12 (75.0)	17 (73.9)	50 (94.3)	58 (98.3)	34 (73.9)	34 (87.2)	25 (78.1)	
	Mounds	33 (12.3)	4 (25.0)	6 (26.1)	1 (1.9)	1 (1.7)	10 (21.7)	4 (10.3)	7 (21.9)	
	Flat	5 (1.9)	0 (0.0)	0 (0.0)	2 (3.8)	0 (0.0)	2 (4.4)	1 (2.6)	0 (0.0)	
Acres under Sweet potato production – median [IQR[3]]		0.6 [0.3 – 1]	0.8 [0.3 -1]	0.5 [0.3 – 1]	0.5 [0.3 – 1]	0.4 [0.1 – 1]	1 [0.5 – 1]	1 [1.0 – 2.00]	0.3 [0.1 – 0.8]	< 0.001
Sweet potato varieties										0.06
	White-Fleshed	270 (72.8)	17 (77.3)	22 (71.0)	54 (72.0)	53 (77.9)	51 (67.1)	43 (72.9)	30 (75.0)	
	Yellow-Fleshed	98 (26.4)	5 (22.7)	8 (25.8)	21 (28.0)	15 (22.1)	25 (32.9)	14 (23.7)	10 (25.0)	
	Orange-Fleshed	3 (0.8)	0 (0.0)	1 (3.2)	0 (0.0)	0 (0.0)	0 (0.0)	2 (3.4)	0 (0.0)	
Months of minor SP harvest										0.04
	January	5 (1.2)	0 (0.0)	2 (5.3)	0 (0.0)	2 (2.6)	1 (1.0)	0 (0.0)	0 (0.0)	
	February	15 (3.6)	1 (3.3)	1 (2.6)	2 (2.5)	7 (9.2)	4 (4.0)	0 (0.0)	0 (0.0)	
	March	34 (8.3)	2 (6.7)	3 (7.9)	6 (7.4)	10 (13.2)	12 (11.9)	0 (0.0)	1 (1.9)	
	April	35 (8.5)	2 (6.7)	3 (7.9)	12 (14.8)	9 (11.8)	6 (5.9)	1 (2.9)	2 (3.9)	
	May	58 (14.1)	4 (13.3)	6 (15.8)	12 (14.8)	15 (19.7)	11 (10.9)	3 (8.8)	7 (13.5)	
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**

Table 7: Sweetpotato Production, Sales, and Consumption of Baseline Survey Participants in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania										
	June	82 (19.9)	8 (26.7)	7 (18.4)	17 (21.0)	15 (19.7)	13 (12.9)	9 (26.5)	13 (25.0)	
	July	82 (19.9)	8 (26.7)	6 (15.8)	18 (22.2)	9 (11.8)	17 (16.8)	12 (35.3)	12 (23.1)	
	August	45 (10.9)	2 (6.7)	4 (10.5)	7 (8.6)	6 (7.9)	12 (11.9)	5 (14.7)	9 (17.3)	
	September	29 (7.0)	1 (3.3)	4 (10.5)	4 (4.9)	1 (1.3)	10 (9.9)	4 (11.8)	5 (9.6)	
	October	19 (4.6)	2 (6.7)	2 (5.3)	2 (2.5)	1 (1.3)	9 (8.9)	0 (0.0)	3 (5.8)	
	November	4 (1.0)	0 (0.0)	0 (0.0)	1 (1.2)	0 (0.0)	3 (3.0)	0 (0.0)	0 (0.0)	
	December	4 (1.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.3)	3 (3.0)	0 (0.0)	0 (0.0)	
Months of major SP harvest										
	January	2 (0.7)	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.5)	1 (1.4)	0 (0.0)	0 (0.0)	
	February	7 (2.3)	0 (0.0)	3 (9.1)	2 (2.4)	1 (1.5)	1 (1.4)	0 (0.0)	0 (0.0)	
	March	18 (5.9)	3 (13.6)	1 (3.0)	6 (7.2)	5 (7.6)	2 (2.7)	1 (5.3)	0 (0.0)	
	April	45 (14.8)	6 (27.3)	3 (9.1)	11 (13.3)	12 (18.2)	12 (16.2)	1 (5.3)	0 (0.0)	
	May	57 (18.8)	5 (22.7)	3 (9.1)	21 (25.3)	15 (22.7)	12 (16.2)	1 (5.3)	0 (0.0)	
	June	79 (26.0)	3 (13.6)	7 (21.2)	19 (22.9)	21 (31.8)	20 (27.0)	6 (31.6)	3 (42.9)	0.004
	July	56 (18.4)	2 (9.1)	6 (18.2)	11 (13.3)	10 (15.2)	17 (23.0)	8 (42.1)	2 (28.6)	
	August	22 (7.2)	2 (9.1)	3 (9.1)	8 (9.6)	1 (1.5)	5 (6.8)	2 (10.5)	1 (14.3)	
	September	9 (3.0)	1 (4.6)	4 (12.1)	3 (3.6)	0 (0.0)	1 (1.4)	0 (0.0)	0 (0.0)	
	October	3 (1.0)	0 (0.0)	2 (6.1)	0 (0.0)	0 (0.0)	1 (1.4)	0 (0.0)	0 (0.0)	
	November	3 (1.0)	0 (0.0)	1 (3.0)	1(1.2)	0 (0.0)	1 (1.4)	0 (0.0)	0 (0.0)	
	December	3 (1.0)	0 (0.0)	0 (0.0)	1 (1.2)	0 (0.0)	1 (1.4)	0 (0.0)	1 (14.3)	
How much of Sweet potato produced was sold?										
	None	186 (73.8)	12 (75.0)	17 (81.0)	40 (76.9)	45 (80.4)	28 (66.7)	20 (55.6)	24 (82.8)	
	Less than half	32 (12.7)	2 (12.5)	4 (19.1)	7 (13.5)	6 (10.7)	6 (14.3)	3 (8.3)	4 (13.8)	0.01
	Half or more	34 (13.5)	2 (12.5)	0 (0.0)	5 (9.6)	5 (8.9)	8 (19.1)	13 (36.1)	1 (3.5)	
Any change in number of plots of Sweet Potato during past 2 years										
	Decreased	16 (6.5)	2 (12.5)	2 (9.5)	2 (3.7)	2 (3.6)	3 (7.1)	5 (16.1)	0 (0.0)	0.1
	Same	216 (87.5)	11 (68.8)	17 (81.0)	49 (90.7)	52 (94.6)	37 (88.1)	23 (74.2)	27 (96.4)	
	Increased	15 (6.1)	3 (18.8)	2 (9.5)	3 (5.6)	1 (1.8)	2 (4.8)	3 (9.7)	1 (3.6)	

Table 8: Sweetpotato Seed Systems and Vine Diffusion of Baseline Survey Participants in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania										
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**
Most important source of SP vines										
	Own farm	242 (91.3)	18 (100.0)	23 (95.8)	53 (98.2)	51 (89.5)	34 (87.2)	38 (88.4)	25 (83.3)	
	Male Neighbour	7 (2.6)	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.8)	0 (0.0)	5 (11.6)	1 (3.3)	0.003
	Female Neighbour	9 (3.4)	0 (0.0)	0 (0.0)	1 (1.9)	2 (3.5)	5 (12.8)	0 (0.0)	1 (3.3)	
	Relatives	6 (2.3)	0 (0.0)	1 (4.2)	0 (0.0)	2 (3.5)	0 (0.0)	0 (0.0)	3 (10.0)	
	Untrained DVM	1 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.8)	0 (0.0)	0 (0.0)	0 (0.0)	
Buy or got the sweet potato vines for free										
	Free	193 (71.0)	15 (79.0)	21 (87.5)	40 (72.7)	42 (71.2)	31 (73.8)	16 (36.4)	28 (96.6)	< 0.001
	Bought	79 (29.0)	4 (21.0)	3 (12.5)	15 (27.3)	17 (28.8)	11 (26.2)	28 (63.6)	1 (3.5)	

[1] – The percentages represent column percentages

[2] - Pearson's chi-squared for proportions and nonparametric equality-of-medians test for averages

Table 9: Sweetpotato Knowledge and Practice of Baseline Survey Participants in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania										
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**
Plant sweet potato several times during one season?										
	No	253 (78.1)	19 (73.1)	25 (71.4)	48 (82.8)	50 (76.9)	34 (79.1)	39 (75.0)	38 (84.4)	0.8
	Yes	71 (21.9)	7 (26.9)	10 (28.6)	10 (17.2)	15 (23.1)	9 (20.9)	13 (25.0)	7 (15.6)	
Conserve sweet potato during the dry period?										
	No	147 (47.3)	15 (57.7)	14 (40.0)	15 (27.3)	29 (47.5)	10 (23.8)	35 (70.0)	29 (69.1)	< 0 .001
	Yes	164 (52.7)	11 (42.3)	21 (60.0)	40 (72.7)	32 (52.5)	32 (76.2)	15 (30.0)	13 (31.0)	
Most common ways of conserving sweet potato vines										
	Plant in lowland/swamp area not fenced	71 (35.2)	7 (58.3)	14 (50.0)	12 (24.0)	10 (28.6)	12 (30.0)	8 (36.4)	8 (53.3)	
	Plant in fenced lowlands / swamp	51 (25.3)	0 (0.0)	5 (17.9)	16 (32.0)	7 (20.0)	13 (32.5)	8 (36.4)	2 (13.3)	0.2
	Keep in a small pot near house and water	22 (10.9)	1 (8.3)	1 (3.6)	10 (20.0)	4 (11.4)	1 (2.5)	3 (13.6)	2 (13.3)	
	Other ways	58 (28.7)	4 (33.4)	8 (27.5)	12 (24.0)	14 (40.0)	14 (35.0)	3 (13.6)	3(20.1)	
If not conserve sweet potato, how gets vines										
	Buy vines	48 (38.7)	3 (30.0)	0 (0.0)	6 (40.0)	11 (37.9)	6 (54.6)	21 (70.0)	1 (4.2)	
	Left over roots re-sprouts in the field	32 (25.8)	5 (50.0)	3 (60.0)	4 (26.7)	9 (31.0)	0 (0.0)	3 (10.0)	8 (33.3)	0.03
	Borrow from neighbours	22 (17.7)	1 (10.0)	1 (20.0)	2 (13.3)	5 (17.2)	4 (36.4)	2 (6.7)	7 (29.2)	
	Ask relatives for vines	22 (17.7)	1 (10.0)	1 (20.0)	3 (20.0)	4 (13.8)	1 (9.1)	4 (13.3)	8 (33.3)	
Ever stored sweet potato root whole and fresh after harvest?										
	No	236 (80.0)	25 (96.2)	25 (73.5)	40 (74.1)	42 (71.2)	33 (78.6)	43 (91.5)	28 (84.9)	0.03
	Yes	59 (20.0)	1 (3.9)	9 (26.5)	14 (25.9)	17 (28.8)	9 (21.4)	4 (8.5)	5 (15.2)	
Ever dried sweet potato roots for storage										
	No	297 (90.8)	24 (92.3)	28 (80.0)	44 (77.2)	64 (95.5)	40 (95.2)	49 (96.1)	48 (98.0)	< 0.001
	Yes	30 (9.2)	2 (7.7)	7 (20.0)	13 (22.8)	3 (4.5)	2 (4.8)	2 (3.9)	1 (2.0)	
Does household consume sweet potato leaves										
	No	145 (34.1)	8 (33.3)	16 (43.2)	8 (13.6)	37 (58.7)	2 (4.6)	30 (33.7)	44 (40.4)	< 0.001
	Yes	280 (65.9)	16 (66.7)	21 (56.8)	51 (86.4)	26 (41.3)	42 (95.5)	59 (66.3)	65 (59.6)	

[1] – The percentages represent column percentages

[2] - Pearson's chi-squared for proportions and nonparametric equality-of-medians test for averages

Table 10: Household Wealth Index of Baseline Survey Participants in selected districts of Morogoro, Iringa and Mbeya regions of Tanzania										
		All[1]	**Iringa**	**Mufindi**	**Chunya**	**Mbozi**	**Waging'ombe**	**Gairo**	**Ulanga**	**P-value[2]**
Wealth Index Score										
	Low	180 (32.8)	21 (32.3)	14 (25.5)	33 (37.5)	18 (23.4)	9 (16.4)	38 (38.4)	47 (42.7)	0.002
	Medium	157 (28.6)	24 (36.9)	12 (21.8)	20 (22.7)	22 (28.6)	19 (34.6)	35 (35.4)	25 (22.7)	
	High	212 (38.6)	20 (30.8)	29 (52.7)	35 (39.8)	37 (48.1)	27 (49.1)	26 (26.3)	38 (34.6)	

[1] – The percentages represent column percentages

[2] - Pearson's chi-squared for proportions

6.6 Photos

Picture 1.0 Enumerator's training Session

Picture 2.0 Group Photo of Enumerators

Picture 3.0 Some of Enumerators completing and verifying Questionnaires

Photo 4.0 Interview in Progress

Photo 5.0 Data Entry and Verification