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PN. ACC-313

97193

05 NOV 1997

“Melhorando a qualidade de vida na Africa rural atraves do melhoramentos dos recursos hídricos, aumento de produção alimentar e fornecimento de serviços sanitários”

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November 5, 1997

AFR/M #149/98

Bob Wilson
FFP Officer - USAID/Mozambique

Subject Submission Of Baseline Monitoring and Evaluation Report

Dear Bob

Attached please find the FY 1997 Baseline Monitoring and Evaluation Report for the Manica Oil Seed Food Security Initiative, which began during FY'97. This document is a presentation of data-gathering and research completed by Africare staff since establishing field operations in Manica Province in March 1997. The information contained in this document has greatly increased our knowledge of the five districts where this food security activity is taking place and has been incorporated into the implementation of our outreach activities during FY 1998.

One important result of this research has been the revision of our logical framework's monitoring and impact indicators. The final section of this report is a presentation of our revised indicators for both components (Oil Seed Promotion and Household Nutrition), including actual values for the baseline year (FY 1997) and targets for each year (where appropriate), mid-term and end-line. This report is being submitted to USAID/BHR/FFP by Africare/Washington. Some of the information contained will be incorporated into the FY 1997 Annual Results Report, to be submitted to USAID/Mozambique on 01/15/98.

I invite you to share this report with your colleagues at USAID/M, and look forward to receiving your reaction to the information, conclusions and recommendations included.

Sincerely,
William P. Noble
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Country Representative
Africare/Mozambique

Project No. 656-0229
Name: PJO II
Grant: 656-0229-6-00
7063-00

enc FY 1997 Baseline Monitoring and Evaluation Report



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AFRICARE/MOZAMBIQUE:

MANICA OIL SEED FOOD SECURITY INITIATIVE

FISCAL YEAR 1997 BASELINE MONITORING AND EVALUATION REPORT

NOVEMBER 1997

BEST AVAILABLE COPY

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Introduction

Africare began implementation of the Manica Oil Seed Food Security Initiative during FY'97. This activity has two interrelated objectives: an oil seed promotion component and a household nutrition component. Both take place in the following five districts of the province: Barue, Gondola, Guro, Manica and Sussendenga. The oil's program will develop a sustainable, small scale oil seed production and processing industry, the nutrition activities will increase awareness and application of improved nutrition and health practices (including increased oil consumption).

After establishing a field office in the provincial capital Chimoio (February 1997), Africare initiated a series of data-gathering and information collection activities to increase understanding of the target area. Another objective of these activities was to provide specific input about the different indicators that will be measured during the five year implementation period to assess the impact of outreach activities. These research activities included:

- Two detailed baseline household surveys (780 households each, one in agriculture and the other in health/nutrition)
- Rapid rural reconnaissance visits to identify communities that will receive support
- Data-gathering visits with health and agricultural officials at the district level
- Sharing of experiences with other development agencies working in the province
- Initial monitoring of participants (oil press owners) at the village level and their experience with this new small-scale enterprise

These activities were completed during the period April - September 1997. Besides the Africare/Chimoio permanent staff, a significant number of temporary personnel were used (enumerators, community guides). This information that has been collected during FY 1997 has been incorporated into field activities to be implemented during FY 1998. One example of this is the revised implementation plan for the Household Nutrition Component that was completed at the end of FY 1997. This document provides more specific operational guidelines for Africare's nutrition activities during FY 1998, and incorporates the information that was gathered.

Another important objective of these research activities was to refine the monitoring and evaluation system that had been presented in the original Development Activity Proposal (DAP) in 1996. Specifically, this refinement includes a review of each indicator in the logical framework and the identification of an actual baseline value for each, upon which specific targets can be made for the remaining years of implementation.

This document is the FY 1997 Baseline Monitoring And Evaluation Report for the Manica Oil Seed Food Security Initiative. This report contains four parts:

- 1) A presentation of the research methodology

- 2) The Data Analysis/Interpretation of the Agricultural Survey
- 3) The Data Analysis/Interpretation of the Health/Nutrition Survey
- 4) A presentation of the revised indicators to be measured during Life Of Activity, including actual baseline values (for FY 1997) and annual, mid-term and end-line targets (where appropriate)

Baseline Survey Time Frame

A principle objective of the household surveys was to obtain a baseline value for key indicators prior to the start of activities. Many of the baseline values presented in the last section of this report are derived from the baseline survey analysis. Those that are not have been derived from periodic visits to the field, document review and direct observation by Africare staff. The baseline survey was the first step to establish Africare's monitoring and evaluation system. The time period allocated for the survey was April - September 1997. April and May were spent developing the study design, devising the sampling methodology, selecting clusters, and designing the questionnaires. Training of the interviewers was done in the early part of June after which the survey was launched and continued through July. Data entry started the beginning of July and was completed by mid-August. Data analysis and interpretation was completed from mid-August through the end of September.

Study Design

The study design selected was a repeat cross-sectional survey at baseline, mid-term and end line with additional measurements of certain key indicators between surveys. Multiple measurements over time will provide trends but does not directly confirm the program's impact. For this reason, an effort was made to identify a possible comparison group with which to compare program sites. However, the following issues were raised:

- 1) If target versus non-target areas were compared, it was felt that it was unethical to ask for the cooperation of non-target communities and then deny them assistance if asked.
- 2) An attempt was made to identify sites where Africare would start their activities and compare those sites with the remaining sites targeted for a later date. However, the oil's program planned to start where communities showed an interest and were willing to take a risk (i.e., the early adopters). Thus it was difficult to predict where Africare would start without first doing press demonstrations and promoting oilseed production.
- 3) Africare selected general target areas, to work with communities within these areas that expressed an interest in oil seed production and processing (this criteria was strongly recommended by USAID during the PAA review of Africare's program in May'97). It was suggested that at mid-term, sites that initiated activities would be compared to the remaining sites which would serve as a nonequivalent control group. One potential difficulty is that the two groups would be too different to compare (differences in income level, access to potential markets and other characteristics).

The study design selected is an improved pretest-post test design where repeat measurements of specific indicators will be taken throughout Africare's 5-year program and compared to the baseline results

Sampling Methodology

Target areas of the program were selected based on the following criteria relevant to the oil component

- Presence of oilseed fields
- Previous history of oilseed production
- Accessibility
- Interest in oilseed production by small holders determined during field interviews
- Suggestions made by the district government officials

Cluster sampling as described by WHO for EPI coverage surveys was used in the selection of villages for the baseline survey (WHO, the EPI coverage survey, 1991) This method is a variation on multistage sampling in which the probability of selecting a cluster is proportional to its size and an equal number of elements is sampled within each cluster

The sample size was calculated with the following formula $n = Z^2 \times p(1-p)/d^2$ The minimum sample size was determined using the following values $Z=1.96$ (error risk of 5%), $p=0.5$ (based on prevalence of stunting which is one variable with high prevalence of 54% in Guro in 1995 according to MSF-CIS/ACNUR), $d=0.05$ (precision of $\pm 5\%$) The sample size calculated, $n=384$, was doubled to make up for the design effect of cluster sampling, thus $N=768$ (MSF/UNHCR/WFP, 1991) Although a larger sample size is preferred to show statistically significant differences at the end of the project, this sample size was maintained due to resource and time limitations

A total number of 78 clusters were randomly selected and 10 households were interviewed in each community Because of the nature of the oil program, it was preferable to select as many communities as possible for the survey to cover more of the target areas Oil seed is a lucrative cash crop and farmers are quick to follow if someone in their community produces and sells it successfully, this is especially true with sunflower For this reason, more variation was expected between communities than within communities It therefore made more sense to increase the number of clusters sampled rather than the number of households sampled in each community

In the field, interviewers were instructed to divide each community, with the help of local authorities, into sectors of approximately equal population density (± 500) and to randomly select one sector in which to conduct their interviews They were able to refer to rough community maps drawn by community leaders and key informants prior to the implementation of the survey To select individual households, interviewers followed the WHO's method of spinning the bottle, randomly selecting a house along the chosen direction for the first interview and systematically selecting subsequent households based on proximity One small modification was made to avoid interviewing close-knit families which was to skip one house in between households

The agriculture and nutrition surveys were conducted in different households for the following reasons

- 1) The oil component is aimed at all farmers, the agriculture survey was designed to collect information about all farmers. The nutrition component's main target are families with children under five, therefore only these families were interviewed during the survey
- 2) Both questionnaires were quite lengthy and to conduct both interviews in the same household would have taken 1½-2 hours of their time. Because each component was going to base its activities in large part on the information collected in the baseline, it was important to include a number of questions for program planning purposes

Selection Of Clusters

Clusters were selected following WHO's guidelines for cluster surveys, Population size estimates were very difficult to obtain. A list of villages/bairros in each area was compiled with their corresponding population size estimates. An attempt was made to obtain updated information at the district level. Whenever such information was not available, the official population numbers were used from the department of statistics in Chimoio. The exceptions were Dombe, an administrative post in Sussendenga, and Pumbuto, a locality in Gondola, where population estimates at the community level could not be obtained. In this case, the individual communities were selected randomly regardless of population size. Attached are population estimates of the target areas and the different clusters that were selected

The total population size of the target areas selected was calculated from these estimates to be about 320,800. With 78 clusters, the sampling interval was calculated as follows $320,800/78 = 4112$. The random number was selected using a currency note 3982. The clusters were then selected using these two numbers

Once selected, a preparatory visit was made to each cluster, to inform the local authorities of the survey and make the necessary arrangements. The leaders and key informants were asked to assist in developing a rough map of their community which was used to facilitate household selection during the survey. During this time, a few communities had to be substituted by others (preferably nearby) after it was determined that they were in fact not accessible by road

Questionnaires

Separate questionnaires were designed for household and child-based information. The agricultural survey was conducted with head of households (female or male), the nutrition survey with mothers of children under five years of age. In designing the questionnaires, a number of surveys were reviewed and some of their questions were adopted or modified (see bibliography list). The questions were developed primarily to obtain either a measurement for one of the key indicators or information needed for program planning. A few questions were added to measure some aspects of overall food security

The nutrition questionnaire focussed on the following areas: dietary intake of 3 basic food groups as well as vitamin A rich foods, breastfeeding habits, oil consumption, management of diarrheal episodes and poor weight gain. Anthropometric measurements (height, weight and age) were also taken.

The principal focus of the agriculture questionnaire was oilseed production and sales. This included 1995-96 as well as 1996-97 production. Questions pertaining to general food security included a series of proxy measurements compiled by Michigan State University's Food Security Project to measure income levels as well as information about agricultural and non-agricultural sources of income, food shortages, and principal crops. Prices of principal crops sold were obtained at local markets instead of during household interviews because it was felt that farmers, hoping they would receive assistance, were likely to report a lower income. The questionnaires were translated into Portuguese in-house and then checked by an external reviewer. Translation into local languages was not done (although some of the interviews were conducted in local languages). A copy of each questionnaire is included at the end of each data analysis & interpretation.

The questionnaires were field-tested numerous times before and during training. A number of questions were eliminated due to their complexity and some were reworded. During the survey, the following questions were found to be most problematic:

In the agricultural questionnaire, Section A, some interviewers were having difficulty differentiating between family-owned businesses (A0013) and salaried work (A0014). Also, some interviewers kept forgetting that the first type of work does not include the sale of their own crops or animals (as defined by MSU). Section B, question #2, the term "house" did not have a clear definition. Some interviewers included any man-made shelter as a house. For question 15 and 16, no time period was specified, and interviewers did not know how far back to investigate. Also, some interviewers were satisfied with the answer "quando tiver dinheiro (when there is money available)" which does not give a clear indication of how many times the family consumed oil. Also, in Section L, some interviewers had some trouble converting amounts sold of the different crops into standard measurements.

In the nutrition questionnaire, Section B, interviewers had trouble limiting their answers to the 2 most important types of vegetables, fruits and other cereals. Some wrote down more than 2, instead of asking which ones were the 2 most important. Section C: the organization that came to the village to do an activity did not always do house-to-house visits and since the questionnaire only asks about the latter, interviewers did not find out who did the demonstration or health activity. Section D: for questions 14 and 15 regarding oil consumption, interviewers had the same problems as in the agricultural questionnaire. Also, it was difficult to determine the exact day the family last bought oil and the exact amounts. In 4 cases, the interviewer erroneously recorded information about pig fat instead of vegetable oil. Section H: Question #40 about warning signs of diarrhea was not always well understood. Some mothers just described what diarrhea meant to them. Copies of each questionnaire are attached to the two data analysis reports (Sections II and III).

Training

The process to select enumerators included the following a basic test was given to determine local language abilities, basic math skills, ability to track and complete forms. The test also helped to identify candidates with knowledge and training in either nutrition/health or agriculture/oilseed production. One or both coordinators interviewed those who passed the test. Selection for the training was based on prior experience with surveys and/or one of the two program components and recommendations from their previous employer. For the final selection, only those who succeeded in the training were hired for the actual survey (25 out of 33 trainees). Although 24 were needed for the actual field work, an additional person was hired to serve as back up in case of illness.

The training of the interviewers took place at the Red Cross facility in Chimoi0 for a period of 8 days from June 4 to June 12. The following topics were covered with the entire training group: roles of interviewers and team leaders, interviewing principles and techniques, and household selection methodology. Participants were then divided into 2 groups, one for each type of survey, nutrition and agriculture. Each group reviewed their questionnaire in detail, and practised conducting interviews in the field and recording the data collected. The nutrition group also practised weighing and measuring children. Following the practice sessions, the questionnaires were simplified and modified according to the results of the field-test.

For the nutrition group, interviewers were given a list of common containers used for oil with their corresponding volume. For bottle caps, they were asked to measure whenever possible the diameter and height of the cap (used to calculate the volume), and if unavailable, they were told to ask for a detailed description of the cap. For the agriculture group, to determine how the crops were being utilized, trainees were taught a participatory rural appraisal technique using the distribution of twenty beans. The pile of twenty beans represented the total production which the farmer then distributed into smaller piles proportionate to the amount eaten, sold, lost, and so on. The trainees were also given a list of common unit conversions to help with calculations of amounts sold. Both groups were given a calendar of events to assist them in determining ages of household members.

Implementation Of The Survey

The survey started on June 16 and ended August 1, 1997. The survey had to be completed by this date so as not to interfere with the national Population and Housing Census planned for the month of August. Timing was convenient for it did not disrupt any major agricultural work. On the other hand, information collected for this year's oilseed production and sales was incomplete because harvesting time for these crops extended into August.

The survey was planned as follows. 24 interviewers were divided into 6 teams of 4 people each. In each team, two interviewers conducted the nutritional survey, the other two completed the agricultural interviews. It was assumed that a team of 2 interviewers could complete 1 cluster in 2 days: ½ day for studying the map, selecting the area to conduct the interview, and making final arrangements for food and lodging, and 1½ days for five questionnaires per interviewer. Allowing for ½ day travel time between clusters, one team

could easily complete 2 clusters per week. During the actual field work, the interviewers, after the first week, were able to finish their weekly quota of interviews more quickly than expected. They were asked to use this extra time to review their questionnaires more carefully and improve the quality of their work.

For logistical reasons, both the nutrition and agriculture surveys were conducted simultaneously but not in the same households. Once the direction was determined by spinning the bottle, the team for one of the surveys went one way while the other team went in the opposite direction. All participation in the survey was voluntary.

The interviewers were supervised by the senior staff of both oil and nutrition components as well as the M&E Coordinator. They were responsible to make sure the interviewers' were completing their work as instructed and to answer any questions they might have had. Due to the number of interviewers, and other responsibilities assigned to the supervisors, it was impossible to accompany every single interviewer working in the field. Some of the interviewers would have benefited from closer supervision.

Vehicles were used to transport the interviewers out to their site, move them mid-week to their next site, and transport them back to Chimoio. Because of the amount of baggage and equipment, the cars were always packed. Coordination of cars was a major task and had to be planned as best as possible beforehand.

Interviewers were informed to take their own bedding, mat, food, and cooking utensils. Africare provided water, buckets and tents. Each community was asked to provide 2-4 guides to accompany the interviewers during their work, a sheltered place to set up camp, and some assistance with cooking meals. However, the participating local authorities differed in their interest and enthusiasm and some teams were left to fend for themselves. The initial preparatory visit and the confirmation letter that followed was apparently not sufficient in some cases to ensure adequate preparations for the survey. Tents were available and were used in some cases but they were not adequate for rainy days. Also, the local guides were not always willing to volunteer their time especially when the interviewers expected them to carry their survey equipment. They felt they should have been paid for their services.

Data Cleaning And Entry

Enumerators were instructed to review each questionnaire at the end of the interview before moving on to the next household. At the end of each day, while still in the field, team leaders carefully reviewed all questionnaires completed by their team members for missing data, errors and inconsistencies. The team leaders then consulted the enumerators to resolve any questions. To encourage quality work, the interviewers received an incentive in cash for each questionnaire properly completed.

After this cleaning in the field, questionnaires were sent to Africare's office where the data-entry team reviewed the data a third time. A few answers were clarified at the end of the week when the enumerators returned from the field. Any open-ended questions were coded and the data entered into EPI-INFO 6.

ACKNOWLEDGEMENTS

The baseline survey would not have been possible without the hard work and dedication of the following people:

Veronica Fletcher, a consultant, who designed the survey and planned and coordinated the execution of field work. Bill Noble, the National Director, Collin A. Elias, the Project Coordinator and Bill Messiter, the oil component Coordinator who provided general guidance and support.

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EXECUTIVE SUMMARY

The goal of the Africare/USAID Manica Oilseed Food Security Initiative is to significantly enhance food security in five districts in Manica Province. Africare aims to do this through the development of a sustainable, small scale oil seed production and processing industry and by increasing levels of awareness and application of improved nutrition and health practices.

This baseline survey had two objectives: to provide general information for planning purposes and to obtain baseline values for measuring programme impact. Based on the incidence of stunting in Guro (MSF-CIS 1995), a minimum sample size of 384 households was determined. This figure was doubled to 768 to compensate for the design effect of cluster sampling. The final sample consisted of a random selection of 78 clusters from the target villages. In each of these, 10 households were interviewed. Two separate questionnaires (agriculture and health) were administered in each of the selected clusters. Both surveys used the same methodology, but the actual interviews were conducted in different households. In the case of the health/nutrition survey only households with children under five years were included in the survey.

The project target areas were primarily selected because of their potential for oilseed production and nutritional considerations played little, if any role in the selection process. The nutrition component is therefore complementary to the agricultural activities and aims to enhance the benefits that will be derived from oilseed production and oil extraction. Relative to other parts of the province and quite likely other parts of the selected districts, the sampled clusters (mainly along the main roads) have good access to markets, transport and other social infrastructure such as schools and clinics. Access to health services is particularly relevant in the case of a nutrition oriented programme as poor health can as much reduce the impact of nutrition education as the lack of food.

In the surveyed area general health service provision and the use of health services is relatively good.

- * The incidence of diarrhoea (20%) amongst children under five was low compared to other parts of Mozambique. At the same time a large percentage of mothers reported seeking help during the child's illness - more than 80% of the affected children were taken for assistance.
- * Growth monitoring is known in the area and 80% of the under fives have road to health charts. Fifty six percent of them were weighed during the past four months, whilst forty five percent of the mothers said that they take their children to the hospital if they do not gain weight.
- * Even though home visits by health personnel are largely unknown, more than half the households in Manica and Sussendenga reported attending a health related activity during the year preceding the survey.

In the light of all the potential support from the formal (and NGO) health sectors, AFRICARE will maximize their impact if they focus on activities that increase the potential nutritional benefits of increased oil production and household income through nutrition education. The benefits will be greatly enhanced if the programme is integrated as far as possible with existing programmes run by the Government and NGO's.

There is a close relationship between food availability and dietary intakes and nutritional status. In agrarian societies, such as the one studied, food supply is largely dependent on household food production activities. The agricultural survey showed a comparatively vibrant agricultural economy in the target area with the production and commercialization of a large variety of

The incidence of diarrhoea was relatively low - only 25% of households had at least one child under five years with diarrhoea during the two weeks preceding the survey. Twenty percent of the under fives were affected.

Breast-feeding practices did not vary a lot between districts. Mothers do not start immediately after birth, as only 48% gave the first feeding within the first hour. Generally mothers also start to wean early - 65% of children of four months and younger took liquids or food other than breastmilk in the seven days preceding the survey. Foods most commonly given were cereal porridge, water and other liquids. The mean age for the first introduction of solid foods was 4.2 months and for liquids 3.8 months. Foods given to significant numbers of breast-feeding children older than 4 months included cereal porridge (79%), groundnuts/sesame/caju (37%) and poultry/meat/fish (34%).

Since dietary adequacy is difficult to measure dietary intake measurements focused on the frequency of food consumption (both 7 day and 24 hour recall). The findings suggest that frequency of intake alone is not a very sensitive indicator in the target area, as households generally have good access to a large variety of different foods during the harvest season. The relatively high intakes of protein rich foods, especially in Manica and Sussendenga, correspond with the observed higher socio-economic status in those districts (agricultural baseline survey) as well as good agricultural production. However, the promotion of protein rich foods will make a significant contribution to dietary adequacy and quality. Food production activities have an even bigger potential to enhance nutritional status, if one focuses on the promotion of the cultivation of vitamin A rich fruits and vegetables. Many of these fruits are seasonal and the focus should be on promoting crops that will be available during times when households normally do not have access to vitamin A rich foods. There is also room for improvement in basic nutritional knowledge. The mother's of children under five were not very familiar with the function and nature of foods in the three main food groups. Fifty nine percent could name at least two carbohydrate rich foods, 30% could name two protein rich foods and 12% two vitamin/mineral rich foods. Only 8% of mothers knew two types of food in all three food groups. Knowledge about food groups appears to be slightly better in Manica and Sussendenga than elsewhere.

different crops. Sixty percent of the mothers under five said that they have their own fields (in addition to family fields). On these they grow a large variety of different crops, of which the staples (particularly maize are the most important). The results of the anthropometric measurements indicate that the biggest nutritional problem in the area is stunting as a result of long-term sub-optimal dietary intakes and possibly diseases (50% of children under five below -2 Zscore). Considering that the past two seasons were better than any during the past five years and that the incidence of stunting amongst children 2-5 years is much higher than that of the whole group, one may assume there is little correlation between current dietary intakes and the high rates of stunting. The anthropometric indicators (even though differences between districts were not very big) largely confirms the findings of the agricultural survey. The three districts with the poorest agricultural production profiles, socio-economic conditions and oil consumption are Curo, Barue and Gondola (Africare 1997). These same districts also had the poorest anthropometric profiles and it is expected that if they are targeted for more intensive assistance in the oil seed part of the programme, the nutritional benefits are also likely to be reflected in reduced stunting rates over time. At present only 18% of the households reported using vegetable oil at least once a day in the preparation of their main meal. Most households who felt that their oil/fat intakes were low said that the main reason for this was that it is expensive and they do not have enough money. It is hoped that the oil component will play a role in making oil more affordable and accessible. At the same time other foods, such as proteins may also become more affordable.

Variations between districts were not significant, but followed a similar pattern as variations in socio-economic conditions and anthropometric indicators. The highest incidences of diarrhoea, poorest socio-economic conditions and highest incidence of malnutrition were found in Guro, Barue and Gondola. Feeding practices during and after diarrhoea indicate that there is still a lot of room for improvement. The adoption of proper feeding practices may have a significant impact on anthropometric profiles, as reduced food intake during diarrhoea impacts negatively on nutritional status. Only 55% of mothers reported giving the same or more liquids, whilst 33% said that they gave the same amount or more food. More than 80% of mothers (both those with children with diarrhoea and those without), reported looking for help when their children had diarrhoea.

1 INTRODUCTION

The Africare/USAID Manica Oilseed Food Security Initiative is a five year programme which started in October 1996 and will continue until October 2001. The goal of the project is to significantly enhance food security in Manica Province. The programme has two main components

- * The development of a sustainable, small scale oil seed production and processing industry in five districts in Manica Province
- * Increased levels of awareness and application of improved nutrition and health practices

The first objective will be achieved through increasing knowledge about oilseed production, creating a demand for oilseed production, facilitating the marketing of oilseeds, providing credit for the purchasing of oil presses and the training of sales agents and repair technicians in the sale and maintenance of oil presses. The nutrition and health component will focus on nutrition education, community based growth monitoring and training in the prevention and treatment of diarrhoea. All activities related to nutrition and health will be a subcomponent of the oil seed programme in so far as its target population will be the communities selected for the oil seed programme.

The Logical Framework of the Project makes provision for a variety of different indicators and measuring tools for monitoring and evaluating programme impact. A large number of these are based on information from household questionnaire surveys, making it necessary to conduct a baseline survey. Since Africare has not worked in Manica Province before it was decided to do a comprehensive baseline survey which in addition to measuring the baseline values of impact indicators also included information necessary for planning purposes. Two baseline surveys were conducted: one to cover the agricultural component and the other for the nutrition/health component. This report only deals with the findings of the nutrition/health survey whilst Report 1 describes the agricultural situation of the target communities. Both surveys were carried out during June and July 1997.

Africare made use of two consultants for the baseline surveys. Veronica Fletcher developed the survey methodology, designed the questionnaires and planned and coordinated the execution of fieldwork. Research Consultancy Services provided comments during the development of the methodology and questionnaire design, but its main task was to analyze the data and prepare the reports.

2 METHODOLOGY

The 320 800 people (49354 households) targeted by the programme was also the target population of the survey. At the beginning of implementation, Africare consulted widely with communities and Government officials to identify villages that produced oilseeds in the past and showed an interest in oil seed production. Another important factor was accessibility - only those villages that are presently accessible were considered for the survey. Poor access would have acted as a disincentive to traders, making oilseeds unmarketable and demotivating farmers.

The calculation of sample size was based on the incidence of stunting in Guro. Stunting is a good indicator of socio-economic status and food intakes. According to MSF (1995) 54% of the children under five in Guro are stunted. Using the formula $n = Z^2 \cdot p(1-p)/d^2$, the minimum sample size was calculated as 384 households¹. In order to compensate for the design effect of cluster sampling the sample size was doubled to n=768. This translated in practice to a random selection of 78 clusters of 10 households each.

Table 1: List of sampled areas

DISTRICT	POST	LOCALITY	SELECTED CLUSTERS
GONDOLA	Inchope	Doeroi	Centro de metuchira, centro de Acomodação. Doeroi
	Amatongas	Pindanganga	Chipindaumwe, Pindanganga-centro
	Macate	Macate	Macate-sede, Mevumbe, Macuenjere, Musangadzi interior
		Marera	Matamira Zinaia
		Chissassa	Fernandes Nhamatanda. Chissassa-sede
		Maconha	Macoropa. Josina Machel Nharimiro
	Zembe	Zembe-sede/Trangapasso	Revue-Kamba, Chauranga, Ripongue
		Boavista	Nhanda, Nhaulanga
	Cafumpe	Chiongo	Tique-tique
		Pumbuto	Pumbuto-sede
	Mavonde	Chitunga	Mocumbue
	Vanduzi	Vanduzi	Belas I. Almada, Verde, Bairro Centro, 25 de Junho
		Pungue-sul	Chitundo, Nhamatiquiti
	Messica	Messica	2 da Bairro Vila Messica, 5 ta Bairro Vila Messica, Bairro Chimoio, Bairro Mutse
		Bandula	Aldeia Garuzo, Chicamba Real, 3 a Bairro Bandula
SUSSEN-DENGA	Sussendenga	Sussendenga-sede	Nhamezara, 25 Junho 1&2, Chicueu, Nhamawaia
		Munhinga 2	Chimbúa
	Rotanda	Rotanda	Mussambudzi (tsetsera)

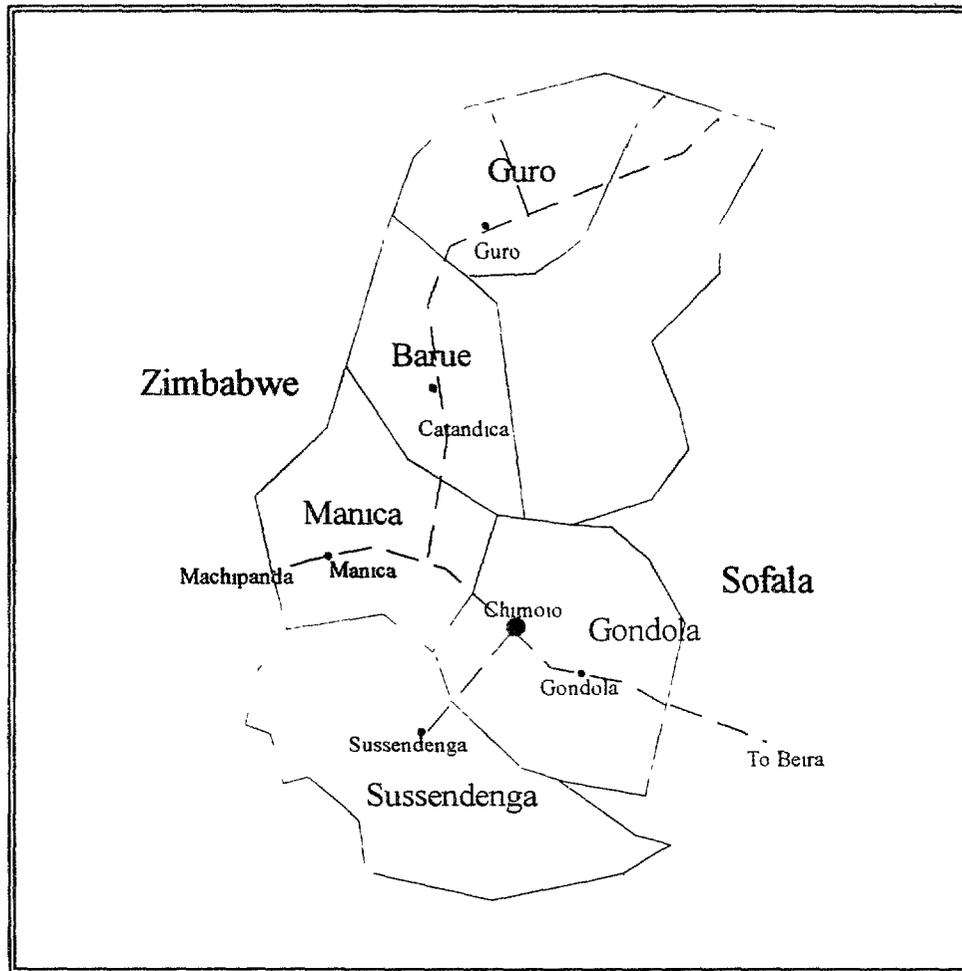
¹ $Z=1.96$ (error risk of 5%), $p=0.5$ (prevalence of stunting of 54%), $d=0.05$ (precision of $\pm 5\%$)

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		Munhinga I	No clusters selected
		Mussapa	No clusters selected
	Muoha	Muoha	Mavita-sede
	Dombe	Mabaia	Motana, chigumete
		Darue	Ndongue, Sanguene
		Matarara	Tussene, Macocue
	Guro	Guro-sede	1 de Maio B, Nhansana, Tsetsekama B, Tsetsekama A, 1 de Maio A, Tongogara A, Samora Machel A, Catoe-local
	Mungari	Mungari	Juliasse Nyerere
		Chivuli	3 de Fevereiro
	Nhamassonge	Nhamassonge	Phumphwa
BARUE	Catandica	Catandica-sede	1 Maio Sahantunzi, Sabao
		Chiwala	Honde Chiwala-centro
		Nhazonia	Matundu, Nhangaze
	Nhampassa	Nhampassa	Nhampassa-sede
		Nhassacara	Nhassacara-sede
		Fudzi	Pandiera, Camazashenga, Fudzi-sede

The map on the next page shows the distribution of these sampled clusters. During fieldwork, key informants helped to divide each community into sectors of approximately 500 people. Thereafter one of these sectors was randomly selected for the survey. The fieldworkers then used the WHO method of spinning the bottle to determine the starting point of each team. The first household was randomly selected along the direction of the bottle by using the random numbers appearing on a currency note. The agricultural team went in the direction where the bottle was pointing, whilst the health team went the other way. Thereafter every second household was selected for interviewing. In the case of the nutrition/health survey, households had to have children under five years old to be included in the survey. If there were more than one mother per household with children under five, only one was selected for interviewing. All questions then related to only her and her children. The agricultural and health surveys were conducted in the same clusters, but in different households. The main reasons for this are, both questionnaires are very long and doing both in one household would have been tiring to the interviewees. The health survey also targeted households with children under five years, whilst the agricultural survey looked at households in general. A copy of the nutrition/health questionnaire is attached in Appendix B.

Map 1. Manica province and the target districts of the project



3 GENERAL CHARACTERISTICS OF THE MOTHER/CARETAKER OF CHILDREN UNDER FIVE YEARS

3.1 General

The mean number of people per household (6.5) did not vary a lot between districts and corresponded well with the findings of the agricultural baseline survey. Most of the mothers with children under five years, were younger than 35 years (mean age 28) and there was also little variation between districts. Nearly half of them had no education (49%) and the mean number of years completed at school was 1.6. The percentage of illiterates amongst mothers with children under five is significantly higher than that in the population as a whole. For example in the agricultural survey, which was carried out in the same clusters, only 35% of individuals older than 10 years did not receive any education.

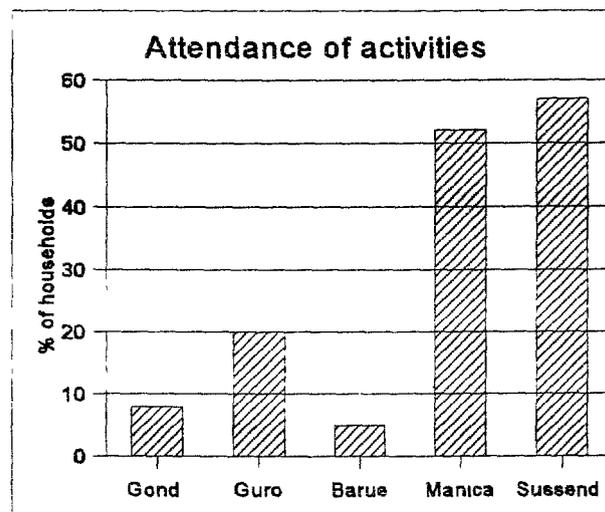
A third of these mothers are involved in income generating activities in addition to raising children, doing household chores and tend to family fields. In Barue and Manica approximately 20% of mothers engaged in income generating activities. The level of activity was significantly higher in Sussendenga (32%), Gondola (38%) and Guro (49%). The most significant income generating activities in all districts were the sale of agricultural produce (50%) and the sale of food prepared at home (22%).

It was difficult to identify any patterns related to the church that people belong to and its implications for nutrition education. The biggest religious grouping was in the 'no religion' (37%) category. This was followed by 'other Christian churches' (33%) and traditional religions (12%). All three of these groups are heterogeneous and it will be difficult to define the effect of their teachings and beliefs about diet and nutrition and then apply it to a nutrition education strategy.

3.2 Health related visits/activities

Generally very few households (4%) received visits from health personnel during the past year. Health related activities appear to be the main mode of contact with health services. These were attended by significant numbers of households in Guro, Manica and Sussendenga as illustrated in the graph below. The main activities in Manica and Sussendenga were vaccinations (41% and 53% respectively) whilst households in Guro and Gondola attended vaccination (Guro 9%, Gondola 3%) and AIDS (Guro 10%, Gondola 3%) related meetings. Maternal/child health/growth monitoring and water and sanitation activities were attended by 1% of the population. The only district where food/nutrition demonstrations were held was Sussendenga and only 1% of the sample attended these.

Graph 1: Percentage of households who attended health related activities during the past year



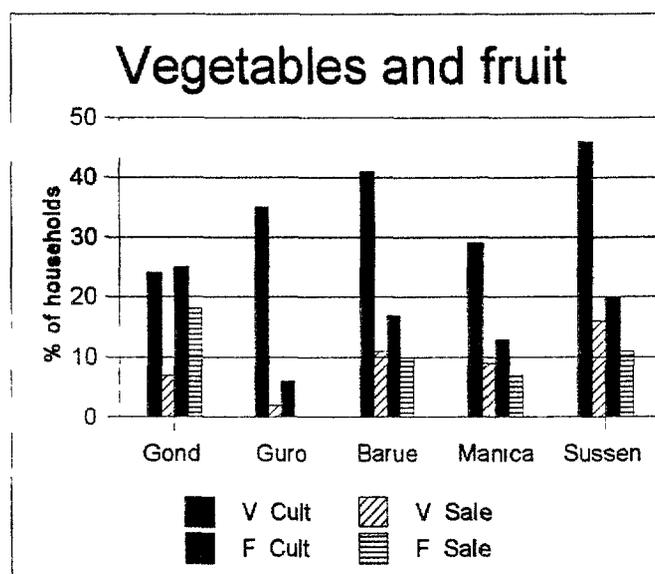
3.3 Agricultural activities

Most of the mothers in Guro (74%), Barue (67%) and Sussendenga (61%) have their own farm plots. The average mother has 1.3 plots with very little variation between districts. The food from their plots were mainly destined for their kitchens, but some crops such as maize, sweet potato/other root crops and fruits were sold by 11 to 27%. Commercial activities were the lowest in Guro where very few mothers reported selling crops.

The cultivation profiles of maize, the main staple food, was very similar across districts - nearly all households planted it and most used it for consumption. Sales/exchanges varied from 18% in Guro to 40% in Barue. Sweet potatoes, cassava and other root crops were cultivated by more than 40% of mothers in all districts. When it comes to protein rich crops Guro was once more the

exception, but instead of having the lowest number of producers Guro had the highest. Whilst between 28 and 53% of mothers in Barue, Manica and Sussendenga grew beans and groundnut, 69% of the Guro households produced groundnut/sesame and 61% beans. The lowest production rates of protein crops were found in Gondola where only 31% produced beans and 28% groundnut/sesame. The graph below illustrates production and sale patterns for fruit and vegetables. Notice the differences between districts and the exceptionally high levels of fruit sales.

Graph 2: Households who produced and sold at least one kind of fruit and vegetables



Abbreviations used V Cult- Vegetable cultivation V Sale- Vegetable sale
F Cult- Fruit cultivation F Sale- Fruit sale

4 GENERAL DIETARY KNOWLEDGE AND PRACTICES

4.1 General

An important factor to consider in terms of nutrition education is the actual distribution of food within the household, particularly when food is in short supply. According to the households interviewed, children are given priority if there is not enough food in 49% of the households and men in 35%. Only 12% of households said that nobody gets preference as food is divided equally amongst all members. The only districts which differed significantly from the others in terms of distribution practices was Guro and Barue. Whereas the vast majority of cases in the other districts give children priority, most households in Guro (51%) give men preference and only 37% consider children first. Barue was the only district where men (39%) and children (40%) had approximately the same distribution.

4.2 Knowledge about three food groups

The Department of Health uses three food groups in their nutrition education programme. Carbohydrates are referred to as food that gives 'força', protein rich foods as foods that help with growth and vitamins and minerals as food that defend against diseases. In order to test the knowledge of mothers and children under five, they were asked to name foods in each of these three categories. The Table on the next page summarizes their responses to this question.

TABLE 2 : Knowledge about food groups

ANTHROPOMETRY	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manca n=150	Sussenda n=140	TOTAL n=780
% of mothers that know 2 items from each group	7	1	9	11	9	8
% of mothers who could name at least two carbohydrate rich foods	51	53	63	63	69	59
Carbohydrate rich foods correctly named by the largest numbers of mothers	Cereals (72) Sweetpotato (34) Oil/fat/coconut (20)	Cereals (68) Sweetpotato (45) Groundnut (16)	Cereals(82) Sweetpotato(39) Oil/fat/coconut (26)	Cereals (87) Sweetpotato (29) Oil/fat/cocconut (26)	Cereals (81) Sweetpotato (44) Bread (20)	Cereals (78) Sweetpotato (40) Oil/fat/cocconut (22)
% of mothers who could name at least two protein rich foods	28	19	32	35	36	30
Protein rich foods listed by the largest numbers of mothers	Mother's milk (25) Milk (18) Meat (16)	Mother's milk (24) Beans (13) Milk (12)	Mother's milk(31) Milk (27) Eggs (19)	Milk (30) Mother's milk (24) Beans (17)	Mother's milk (23) Milk (21) Eggs (20)	Mother's milk (25) Milk (22) Eggs (16)
% of mothers who could name at least two vitamin/mineral rich foods	13	3	10	19	12	12
Vitamin/mineral rich foods listed by the largest numbers of mother's	Fruits (16) Eggs (13) Mother's milk (12)	Mother's milk (8) Milk (6) Eggs (6)	Mother's milk (19) Milk (19) Eggs (13)	Vegetables (19) Fruit (19) Mothers milk (17)	Mother's milk (22) Milk (14) Eggs (11)	Mother's milk (15) Milk (12) Eggs (11)

Less than 10 % of mothers know at least two items from each of the three main food groups. Most of the districts, except Guro had similar profiles. In Guro only one percent of the mothers could name two types of food in all three food groups. Generally protein and mineral/vitamin rich foods (and their function) were the least known. Carbohydrate rich foods were different - significantly high percentages of mothers knew that cereals give energy. Sweetpotato/tubers were also mentioned by 40% of households. Milk and eggs are recognized (albeit by small percentages of mothers) as nutritious and providers of both growth and protection against diseases. Interestingly enough, Guro, the main groundnut producer in the area also had some mothers who recognized the nutritional value of groundnut.

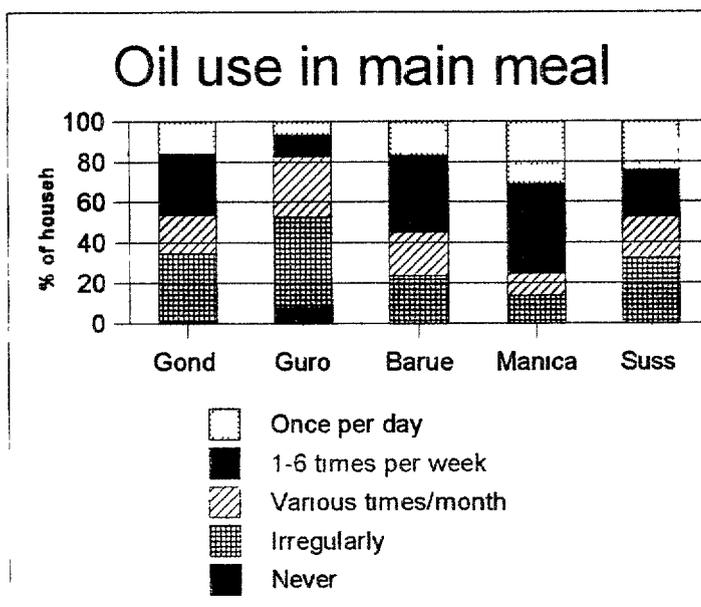
5 FOOD CONSUMPTION

5.1 Oil consumption

The vast majority of households (94%) bought the oil they have been using most recently. There were no significant variations between districts and most (82%) reported buying 'colza'. Around 10% reported using sesame oil in all districts, except Guro. Here a significantly higher number

(23%) consumed sesame oil. Neighboring oil presses were hardly used - only 1% across all surveyed districts said that they use locally pressed oil. The graph below shows the frequency with which oil is used for preparing the main meal.

Graph 3. Frequency with which oil is used to prepare the main meal



The graph shows that the use of oil in cooking is the most widespread in Manica, followed by Barue, Gondola and Sussendenga. The latter two districts had very similar usage patterns.

Oil and fat intakes measured during the seven day recall, were the highest in Manica where only 7% did not eat any oil during the preceding 7 days. This corresponds well with the oil use patterns reported in Report 1 and the use of oil for meal preparation. However, the same cannot be said of Sussendenga. Despite the fact that Sussendenga had a high reported use of oil for meal preparation, this is not well reflected in the seven day recall, as 41% of households said that they did not eat oil in the seven days preceding the survey.

The quantities of oil consumed² per household varied, but the means for all districts varied between 74 and 91 millilitres of oil per family per day (mean for total population 83 ml (standard deviation 66)). The mean consumption per person, per day was 14 millilitres.

The benefits of oil consumption are not that widely known - only 20% of mothers could correctly mention two benefits of oil consumption. The only benefit of oil consumption mentioned by significant percentages of households is that it 'improves the taste of food'. Sixty eight percent said that this is an important characteristic of oil. Other benefits mentioned were vitamins (22%) and give energy (11%).

² These quantities are based on the amount of oil bought, the last time when oil was bought, and the time period that the oil lasted. It does not reflect regular consumption as the oil consumption pattern is not constant throughout the year for most households. However, if the survey is done at the same time during the mid-term and final evaluations and the question is phrased in the same manner, one will have comparative data for a particular time of the year.

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5.2 24-hour recall

The twenty four hour recall focused on the types rather than quantities of food consumed on the day preceding the survey. Approximately 95% of households in all districts except Gondola described the previous day's eating patterns as normal. In Gondola, 15% regarded their food intake as unusual³. As was expected nearly all households ate staple foods/cereals on the day preceding the survey. In terms of protein rich foods and foods providing minerals and vitamins, there was considerable variance between districts. The reported intakes of protein and vitamin/mineral rich foods were surprisingly high. Between 71% (Gondola) and 85% (Guro and Barue) reported eating at least one type of protein rich food on the day preceding the survey. Plant proteins (beans/groundnut/sesame) was the main source of protein for most households in Guro (73%), Barue (62%) and Sussendenga (61%). In Gondola (48%) and Manica (61%) animal proteins in the form of meat/poultry/fish were the most important.

The intake of at least one type of vegetable and fruit was exceptionally high in most districts except Gondola. In Gondola only 60% said that they ate products from the category on the day preceding the survey. Elsewhere this statistic ranged from 81% in Guro to 97% in Sussendenga. The most frequently used source of vitamins and minerals was vegetables in all districts (range between 68% in Gondola and 90% in Barue). The intake of leaves was the lowest in Manica (11% compared to a total of 35% across districts) and fruits were most eaten in Gondola (33% as opposed to 18% across districts). Also see Table 4 in the Appendix for more details.

5.3 Seven day recall

5.3.1 Carbohydrate rich foods

Maize and Sweetpotato/other tubers were the most important staples consumed during the seven days preceding the survey. 64% of households ate maize once or more times per day, whilst sweetpotato/tubers were consumed with the same frequency by 46% of households. In most districts with the exception of Guro, maize and sweetpotato were the most important staples. In Guro both these crops played an important role, sorghum also featured strongly. 37% of households ate sorghum at least once per day, as opposed to the 12% across the whole province.

The least consumed items were bread and rice which approximately 70% of all households did not eat at all in the 7 days preceding the survey. Manica was the only district where significant percentages of households ate bread (46%) which may be a reflection of the relatively higher socio-economic status of households in that district as described in the agricultural baseline survey.

See section 5.1 for a discussion of oil/fat consumption.

5.3.2 Protein rich foods

The intake of protein rich foods as measured in the seven day recall differed significantly from that measured in the 24 hour recall. Given crop production patterns and the anthropometric measurements one would think that the 7 day recall gives a better reflection of habitual intakes.

³ The survey was carried out on June 26th in Gondola. The special meal probably refers to feasts held on the public holiday, June 25th. If only those who reported normal meals are considered 68% (24 hour recall) and 55% (7 day recall) consumed at least one protein rich food per day. The intake of meat/fish/poultry as measured in 24 hour recall also dropped from 48% to 42% if only those who had a normal meal are considered.

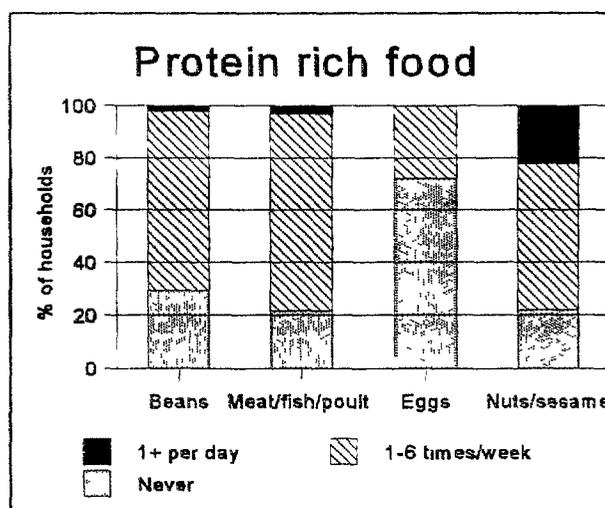
than the 24 hour recall. Only 55% of households ate protein rich foods at least once per day and reported intakes were very similar in all districts. The highest percentages were recorded in Guro (where groundnuts are produced in large quantities), Manica and Sussendenga

TABLE 3: Intake of protein rich foods during the seven days preceding the survey

TYPES OF FOOD	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen- denga n=140	TOTAL n=780
% who ate at least one item of protein rich foods per day	46	65	56	65	54	55

The graph below shows the relative frequencies with which the various protein rich categories were consumed

Graph 4: Protein rich foods consumed during the seven days preceding the survey



Eggs are relatively seldom eaten, despite the fact that 79% of households own chickens (see Agricultural baseline survey). Interestingly enough households are also not that satisfied with their egg intake as only 27% said that it is sufficient. In contrast to the 24 hour recall, the consumption of meat/fish/poultry in particularly Manica and Gondola, is much more tempered and closer to what one would expect. Using this categorization, Manica is still the highest consumer of meat/fish and poultry (89% ate it between 1 and 6 times per week) and Gondola's profile is closer to that of the other districts. This probably reflects the fact that 15% of the Gondola households said that they ate a special meal on the day preceding the survey, thus making the 24 hour recall results a little less reliable. The lowest intakes in the meat/fish/poultry category was recorded in Guro where approximately a third of households said they did not eat anything from that category during the preceding week. This once more, corresponds with the general observation about the relatively low socio-economic status of households in Guro. The graph also reflects that the diets of most households are largely vegetarian and that the most widely consumed protein sources are beans, groundnuts and other nuts/sesame.

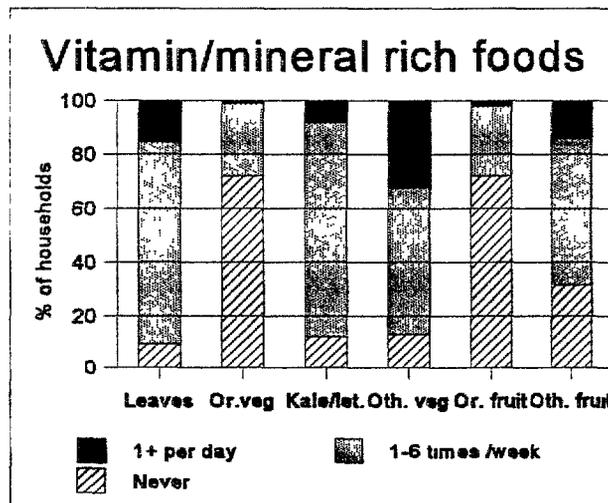
5.4.3 Vitamin/mineral rich foods

TABLE 4: Intake of vitamin/mineral rich foods during the seven days preceding the survey

TYPES OF FOOD	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
% who ate at least one item of vitamin/mineral rich food per day	87	54	81	80	88	80
% who ate at least one food rich in vitamin A per day (leaves, kale, lettuce, orange colored fruits, orange colored vegetables, eggs)	44	24	33	27	46	37

Eighty percent of the households interviewed ate fruit or vegetables at least once per day. The intake of these foods ranged in most districts, except Guro, between 80 and 88%. In Guro fruit and vegetable consumption was exceptionally low with 54% of households who consumed it daily. Foods rich in vitamin A was eaten less frequently. An estimated 34% of households ate at least one vitamin A rich item per day. The most important source of vitamin A in all districts was leafy vegetables, as orange colored fruits and vegetables were eaten by less than 30% of households during that week. Barue was the exception when it comes to orange colored vegetables - 49% of households ate it. On the other hand, the intake of orange colored fruit was the second lowest in Barue (17%) and the lowest in Guro (7%). In Sussendenga, Barue and Gondola between 33 and 46% of households said that they ate foods rich in vitamin A daily. Mothers in Gondola reported the highest frequency of consuming vitamin A rich foods (31%) and Guro reported the lowest (20%).

Graph 5: Frequency of consumption of different kinds of fruit and vegetables



Abbreviations used

- Or Veg Orange colored vegetables
- Kale/Let Kale and lettuce
- Oth Veg Other vegetables
- Or fruit Orange colored fruit
- Oth Fruit Other fruit

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5.4 Sufficiency of intake

The question that dealt with the seven day recall also looked at the mother's perceptions about the sufficiency of their dietary intakes. The results showed that households are generally satisfied with their carbohydrate intakes, although a significant percentage would like to see increases in bread and rice consumption. Presently only 9% are happy with their bread- and 17% with their rice intakes.

Other types of food where more than 50% of households said that they were dissatisfied with their present consumption were

- * Orange colored vegetables (51%)
- * Orange colored fruits (56%)
- * Fish/meat/poultry (54%)
- * Oil/fat (71%)
- * Eggs (73%)

The most common reasons given by mothers as to why they felt that their intake of these products are insufficient were

- * Orange colored vegetables Not the right time (33%) low yields (27%) do not produce (19%)
- * Orange colored fruits Not the right time (39%), do not produce (20%), expensive/lack of money (17%)
- * Fish/meat/poultry Expensive/lack of money (96%)
- * Eggs Expensive/lack of money (68%), do not produce (18%)
- * Oil/fat Expensive/lack of money (98%)

6 BREAST-FEEDING PRACTICES

6.1 General

Sixty seven percent of the households interviewed have at least one child under five that is breast-feeding. The variation between districts was small. The highest percentage of households with nursing children was found in Guro (74%) and the lowest in Manica (62%). Approximately half of these children started breast-feeding within the first hour after birth. Eight percent of the mothers reported waiting for eight hours or more before initiating breast-feeding. There were no significant differences between districts in terms of the interval between birth and the initiation of breast-feeding. The oldest child still breast-feeding at the time of the survey was 41 months old and 6% of the breast-feeding children were older than 2 years.

6.2 Weaning practices and knowledge

The mean age when mothers believe solid foods need to be introduced did not vary a lot between districts. It ranged from 4.1 months in Guro and Manica to 4.5 in Gondola. According to the mothers fluids have to be introduced slightly earlier. The responses ranged from a mean of 3.4 months in Sussendenga to 4.2 in Guro. The overall mean was 3.8 months.

The findings of the 24 hour recall and seven day recall were very similar when it comes to foods given in addition to breastmilk. The most important supplementary foods and liquids given at least once during the seven days preceding the survey was water (81%), cereal porridge (74%), other solid/semi-solid foods⁴ (45%)

Children older than 4 months received a pretty mixed diet during the seven days preceding the survey. Cereal porridge was the most important food stuff given to them - 79% ate it at least once in the seven days preceding the survey. Other important foods were groundnut/sesame/caju (36%), fish/poultry/meat (34%), beans (26%). Other solid/semi solid foods³ were eaten by 54% of the population

6.3 Children of 4 months and younger

Nineteen percent of the breast-feeding children were four months and younger. Of them 65% took liquids/solids/semi-solids during the seven days preceding the survey. Mothers appeared to rather give food than fluids as supplements to this age group - thirty seven percent received liquids as opposed to the 52% who took solids/semi-solids. The most commonly given fluids/foods in the week before the survey were cereal porridge (50%), water (31%) and other liquids⁵ (12%)

7 INCIDENCE OF DIARRHOEA AND PRACTICES

7.1 Incidence of diarrhoea

The incidence of diarrhoea across the surveyed area was low compared to other parts of Mozambique - only 25% of households had a child/children with diarrhoea during the two weeks preceding the survey and 20% of the children under five were affected. There was little variation between districts with the highest percentages recorded in Gondola (28%) and Barue (27%). This is followed by Guro and Manica (23%) and Sussendenga (19%)

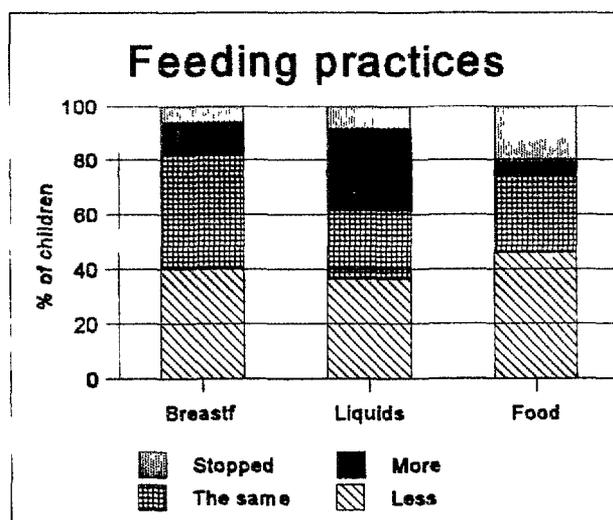
7.2 Feeding and drinking practices during diarrhoea

Feeding and drinking practices during diarrhoea indicate that the majority of mothers give the same or less food and liquids during an episode of diarrhoea. Only 30% of mothers said that they gave their children more liquids and 4% gave them more food. The graph on the next page illustrates these feeding practices

⁴ The questionnaire had a category 'other solid/semi-foods' which referred to foods other than cereal porridge, sweet potato/other tuber porridge, beans, eggs, fish/birds/meat, groundnut/sesame/caju

⁵ The questionnaire had a category 'other liquids' which referred to all liquids except water, water with sugar, juice, tea, any type of milk and ORS

Graph 6 Feeding practices when a child has diarrhoea



7.3 Treatment of diarrhoea

7.3.1 Practices of mothers whose children had diarrhoea during the two weeks preceding the survey

Eighty three percent of the children were taken to others for advice/assistance from others during their bout of diarrhoea. The percentages of afflicted children in each district that were taken for assistance were the highest in Guro (92%) and Manica (89%). The remaining districts, Gondola (79%), Sussendenga (81%) and Barue (83%) had slightly lower, but similar profiles.

The kinds of treatments given to the children who were taken to health professionals varied. The most important were modern medicines (48%), oral rehydration fluid (39%) and traditional remedies teas etc (34%).

7.3.2 Practices of mothers in general

When a child has diarrhoea most mothers (82%) said that they take the child to a hospital/clinic. Other actions that they often take are: Give them modern medicines (38%), give them oral rehydration fluid (36%) and give them traditional medicines (30%).

The signs most generally used to base a decision on whether treatment should be sought are:

- * Watery stools/constant diarrhoea⁶ (62%)
- * Fever (35%)
- * Weakness/tiredness (34%)
- * Loss of appetite (17%)
- * Vomits (14%)
- * Sunken eyes (11%)

⁶ This general phrase was often given by the mothers when asked about the symptoms that they base a decision on seeking help on. Despite probing the interviewers were not able to get more specific information. This response was not considered as 'correct' when calculating the indicator for knowledge on signs of serious diarrhoea.

The differences between districts were relatively minor. One sign looked at by significant numbers of households in Gondola and Guro, but not in the other, was the duration of diarrhoea. Eighteen and 15% respectively looked for help when diarrhoea lasted for fourteen days⁷ or more.

7.4 Practices after diarrhoea has ended

Practices after diarrhoea ended did not vary a lot. Approximately half of the mothers give extra food or food high in calories to their children after an episode of diarrhea. Twenty three percent of the mothers believe that they should give their children small quantities of food more frequently after an episode of diarrhoea, twenty percent rather give them more than they normally eat and only 15% give them food with more calories. Interestingly enough significantly more households in Manica (25% as opposed to a mean percentage of 15% across all districts) reported giving food with more calories to their children after episodes of diarrhoea.

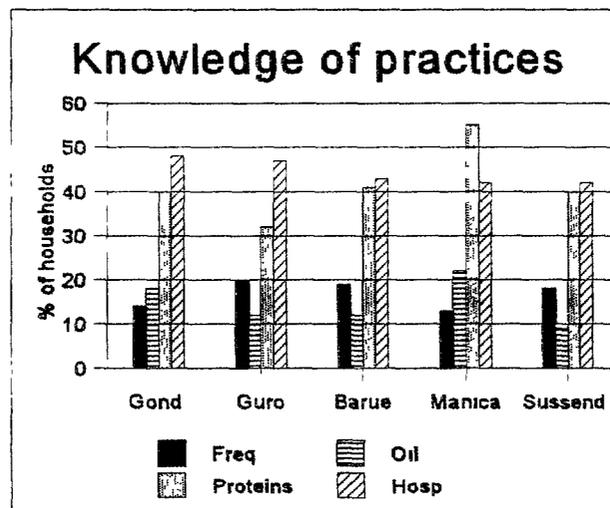
8 ANTHROPOMETRIC PROFILES OF CHILDREN UNDER FIVE

The actions most commonly taken when a child does not gain weight are

- * Take to hospital (45%)
- * Give food with proteins (42%)
- * Give food more frequently (16%)

The graph below illustrates the differences between districts when it comes to the recommended actions in the absence of weight gain.

Graph 7: Knowledge of recommended practices in the absence of weight gain



Abbreviations used: Freq(give food more frequently), Oil (put more oil in food), Proteins (give food with proteins), Hosp (Take to hospital)

⁷ The option 'fourteen days or more' came from a model KPC questionnaire. However, it is believed that the interviewers sometimes also selected this option if mothers said 'when it lasts for a long time' rather than just for the two week period mentioned.

The survey team determined the weight, height and age measurements of children in addition to general information about edema, possession of a health card and their growth monitoring history. Compared to other parts of Mozambique, the target districts are relatively well served with health personnel and health infrastructure. Considering that most of the selected areas were close to main roads and state provided infrastructure, one would expect reasonably good health profiles. Gondola has the highest people/health personnel ratio (3267 people to each health worker), whereas Sussendenga and Barue had the lowest and very similar profiles (899 per health worker). The fact that 80% of the surveyed children under five were in possession of a road to health chart reflects good access to health care services. Growth monitoring also appears to take place although it is still quite irregular. Only fifty six percent of the children with road to health charts were weighed within the last 4 months. The highest percentages were recorded in Guro and Sussendenga (61 and 60% respectively) and the lowest in Gondola 49%. Table 5 summarizes the anthropometric indicators used in the study.

TABLE 5: Anthropometric measures

ANTHROPOMETRY	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen- denga n=140	TOTAL n=780
Number health posts (centers)*	10(1)	5(2)	8(1)	Not available	5(1)	-
Number of health personnel* Ratio per inhabitant	100 3267	64 1337	76 895	Not available	73 899	-
Population*	326 734	85 552	67 983	Not available	65 613	-
Height for age(0-59 mnths) Z-score <-2 (95% CI) Z-score <-3 (95% CI)	n=309 55 (49-61) 25 (20-30)	n=133 59 (51-68) 25 (18-33)	n=316 52 (46-58) 23 (19-29)	n=190 42 (35-49) 17 (12-24)	n=158 40 (32-48) 17 (11-23)	n=948 50 (47-53) 22 (19-24)
Weight for Height (0-59 mnths) Z-score <-2 (95% CI) Z-score <-3 (95% CI)	n=315 8 (6-12) 2 (0-3)	n=131 7 (3-13) 2 (0-6)	n=324 11 (8-15) 4 (2-7)	n=191 7 (4-12) 1 (0-3)	n=154 5 (2-10) 0 (0)	n=953 8 (6-10) 1 (1-2)
Weight for age (0-59 mnths) Z-score <-2 (95% CI) Z-score <-3 (95% CI)	n=319 40 (35-46) 13 (10-18)	n=135 44 (35-53) 16 (11-24)	n=318 38 (32-43) 13 (9-18)	n=191 27 (21-34) 7 (4-12)	n=161 27 (21-35) 10 (6-16)	n=965 36 (33-39) 12 (10-14)

* Sources ACNUR/PNUD 1996

Stunting or height for age, is generally used as an indicator of long-term dietary intake and also gives a good reflection of general socio-economic status. Weight for height on the other hand reflects acute malnutrition and is usually related to short-term dietary deficiencies. Within the context of this study, one should remember that the anthropometric measurements were taken towards the end of the 'season of plenty' and acute cases of malnutrition is unlikely to be

encountered. However, given the fact that the Agricultural baseline survey did not identify a significant or prolonged hunger period, one may expect that the incidence of wasting is unlikely to increase significantly during the hunger season.

Using the criteria recommended by MSF-CIS (1995b), the anthropometric profiles of the target population can be summarised as follows:

- * **The incidence of severe stunting is the highest in Gondola (55%), Guro (59%) and Barue (52%) where more than half of the children have low heights for their ages. The situation in Manica (42%) and Sussendenga (40%) is slightly better, although still on the high side. Most of this probably relates back to food supply problems experienced 3 years ago or more as the incidence of stunting was higher amongst the children between 2 and 5 years than in the group as a whole (see Table 17, Appendix A).**
- * **Acute malnutrition (low weight for height) was not present in any district although its incidence indicates that the situation should be monitored. This was confirmed by the low presence of edema in the feet of the children, which is usually a sign of kwashiorkor. Across the area surveyed, 5% or less of them showed signs of edema. The 4% below the -3 Z-score in Barue shows that the situation may be serious and the potential exists for this area to have serious problems with wasting during the harvest season.**

9 INDICATORS

The table below summarizes the impact indicator values at baseline.

TABLE 6: Indicators

INDICATOR	Indicator value
Oil consumption	
% of households consuming vegetable oil once per day	18
% of households consuming locally processed oil at least once per week as measured during the harvest season	0
% of mothers who can name at least 2 benefits of adequate oil consumption	20
General nutrition	
% households consuming on average at least 1 item of protein rich foods each day (7 day recall)	55
% households consuming vitamin A rich foods (leaves/orange coloured vegetables & fruits/ eggs on average at least once/day)	37
% of mothers who can name at least 2 items from each of the three food groups	8
% mothers who can name at least 2 items from 'food group that gives energy'	59
% of mothers who can name at least 2 items from 'food group that make children grow'	30
% of mothers who can name at least 2 items from 'food group that protects'	12

Breast-feeding	
% of children under four months old who receive no foods or liquids other than breastmilk	35
% of mothers initiating breast-feeding within one hour after delivery	48
Diarrhoea	
% mothers giving ORS or home fluids for management of diarrhoea/dehydration during an episode of diarrhoea	38
% of mothers offering extra fluids to child during diarrhoeal episode *	30
% mothers continuing feeding child (same amount or more) during diarrhoeal episode *	33
% of mothers giving extra food and or food high in calories to child immediately following a diarrhoeal episode	51
% of mothers who know when to seek treatment for diarrhoea based on ability to name at least 2 warning signs	45
Malnutrition	
% of mothers giving extra food to child with poor weight gain	16
% mothers adding oil to food of child with poor weight gain	15
% mothers giving extra protein rich foods to child with poor weight gain	42
% children wasted (weight for height) (0-59)	
<-2 Z-score	8
<-3 Z-score	1
% children underweight (weight for age) (0-59)	
<-2 Z-score	36
<-3 Z-score	12
% children stunted (height for age) (0-59)	
<-2 Z-score	50
<-3 Z-score	22

* These indicators relate to the practices of mothers whose children had diarrhoea during the survey. The other indicators on diarrhoea are more general and was asked of all mothers regardless of whether their children had diarrhoea or not during the two weeks preceding the survey.

10 CONCLUSIONS AND RECOMMENDATIONS

10.1 General

The project target areas were primarily selected because of their potential for oilseed production and nutritional considerations played little if any role in the selection process. The nutrition component is therefore complementary to the agricultural activities and aims to enhance the benefits that will be derived from oilseed production and oil extraction. Relative to other parts of

the province and quite likely other parts of the selected districts the sampled clusters (mainly along the main roads) have good access to markets, transport and other social infrastructure such as schools and clinics Access to health services is particularly relevant in the case of a nutrition oriented programme as poor health can as much reduce the impact of nutrition education as the lack of food

In the surveyed area general health service provision and the use of health services is relatively good

- * The incidence of diarrhoea (20%) amongst children under five was low compared to other parts of Mozambique At the same time a large percentage of mothers reported seeking help during the child's illness More than 80% of these children were taken for assistance during their illness
- * Growth monitoring is known in the area and 80% of the under fives have road to health charts Fifty six percent of them were weighed during the past four months, whilst forty five percent of the mothers said that they take their children to the hospital if they do not gain weight
- * Even though home visits by health personnel are largely unknown, more than half the households in Manica and Sussendenga reported attending a health related activity during the year preceding the survey

In the light of all the potential support from the formal (and NGO) health sectors, AFRICARE will maximize their impact if they focus on activities

- * That maximizes the potential nutritional benefits of increased oil production and household income through nutrition education Focusing on aspects such as food distribution within households, the nutritionally correct preparation and composition of meals using locally available foods
- * Integrate their programme as much as possible with the existing Government programmes, so that health and nutrition messages will be mutually reinforcing

10.2 Agricultural activities and nutrition

The structure of the question on agricultural production made it difficult to extract quality data on the kinds of crops produced by the mothers who have their own fields/crops One does however get an idea of the nature of their direct involvement in food production even though it can be assumed that they do a large share of the work in the family fields too Sixty percent of the mothers said that they have their own fields The kinds of crops grown did not vary a lot, but the patterns generally corresponded with the findings of the agricultural baseline survey and reported dietary intakes There was for example a link between the high percentages of households in Guro who planted beans, groundnuts/sesame and the reported dietary intakes of both the 24 hour and seven day recall

The results of the anthropometric measurements indicate that the biggest nutritional problem in the area is **stunting**, as a result of long-term sub-optimal dietary intakes and possibly diseases (50% of children under five years below -2Zscore) Considering that the past two seasons were better than any during the past five years and that the incidence of stunting amongst children 2-5 years is much higher than that of the whole group, one may assume there is not a big correlation between current dietary intakes and the high rates of stunting The agricultural survey and statistics on the production and sale of staple crops suggest that the availability of staples during the past season and particularly during the harvest season was good in most areas It is also expected that the greater availability of oil and subsequent reduction of oil prices (through the oil component of the programme) is likely to make a significant contribution to energy intake and

the reduction of children under five. Guro, Barue and Gondola had the poorest socio-economic profiles and if they are targeted for more intensive assistance in the oil seed part of the programme, the nutritional benefits are also likely to follow. Particularly if this is supplemented by educational activities on the benefits of oil consumption.

The relatively high intakes of protein rich foods, especially in Manica and Sussendenga, correspond with the observed higher socio-economic status in those districts (agricultural baseline survey) as well as good agricultural production. However, there is still a lot of room for improvement in so far as protein intakes are concerned. Most households who felt that their fish/meat/poultry and oil/fat intakes were low said that the main reason for this was that it is expensive and they do not have enough money. It is hoped that the oil component will play a role in making these foods more affordable.

Food production activities have the biggest potential to enhance nutritional status if one focuses on the promotion of vitamin A rich fruits and vegetables. Many of these fruits are seasonal and the focus should be on promoting crops that will be available during times when households normally do not have access to vitamin A rich foods.

10.3 Nutrition education messages

The mothers of children under five were not very familiar with foods from the three main food groups. Fifty nine percent could name at least two carbohydrate rich foods, 30% could name two protein rich foods and 12% two vitamin/mineral rich foods. Only 8% of mothers knew two types of food in each food group. Knowledge about food groups appears to be slightly better in Manica and Sussendenga than elsewhere.

Breast-feeding practices did not vary a lot between districts. Mothers do not start immediately after birth as only 48% gave the first feeding within the first hour. Generally mothers also start to wean early - 65% of children of four months and younger took liquids or food in the seven days preceding the survey. Foods most commonly given were cereal porridge, water and other liquids. The mean age for the first introduction of solid foods was 4.2 months and for liquids 3.8 months. Foods given to significant numbers of breast-feeding children older than 4 months included cereal porridge (79%), groundnuts/sesame/caju (37%) and poultry/meat/fish (34%).

10.4 Diarrhoea: its incidence and treatment

The incidence of diarrhoea was relatively low - only 25% of households had at least one child under five years with diarrhoea during the two weeks preceding the survey and 20% of the under fives were affected. Variations between districts were not significant, but followed a similar pattern as variations in socio-economic conditions and anthropometric indicators. The highest incidences of diarrhoea, poorest socio-economic conditions and highest incidence of malnutrition were found in Guro, Barue and Gondola.

Feeding practices during and after diarrhoea indicate that there is still a lot of room for improvement. The adoption of proper feeding practices may have a significant impact on anthropometric profiles, as reduced food intake during diarrhoea impacts negatively on nutritional status. Only 55% of mothers reported giving the same or more liquids, whilst 33% said that they gave the same amount or more food. More than 80% of mothers (both those with children with diarrhoea and those without), reported looking for help when their children had diarrhoea.

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APPENDIX A

DETAILED TABLES

TABLE 1 General characteristics of the mother caretaker of children under five years

	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussend n=140	TOTAL n=780
Mean number of people who normally eat in the household	6.0(2.5)	6.5(3.0)	6.4(3.7)	6.4(3.7)	6.5(2.7)	6.5(2.8)
Mean age (SD)	29.78	28.77	28.74	28.82	28.72	28.77
Mean number of years completed at school (SD)	1.3(1.7)	1.1(1.6)	2.0(2.1)	2.1(2.2)	1.8(2.1)	1.6(2.0)
% with no education	55	57	44	41	48	49
% involved in income gen activities	38	49	21	20	32	32
Types of activities						
% Non-agricultural self-employment	3	0	3	3	2	2
% Temporary agricultural work	2	1	2	3	1	2
% Sale of agricultural produce	43	40	57	59	56	50
% Sale of food prepared at home	23	21	27	35	12	22
% Commercial activities - self emp	0	1	5	11	1	5
% Traditional medicine	0	0	0	0	0	0
% Other (specify)	0	4	0	0	1	0
Religion						
% Muslim	0	0	2	1	0	1
% Catholic	8	4	9	9	7	8
% Jehovahs witness	0	0	0	1	2	1
% Assemblies of God	9	4	5	9	4	7
% Evangelical church	0	0	0	1	1	0
% Baptist church	0	0	0	0	1	0
% Protestant church	1	2	0	1	1	1
% Other Protestant churches	4	2	0	1	2	1
% Traditional religion	8	0	1	0	1	2
% None	24	56	55	37	31	37
% Other (specify)	3	0	0	0	0	1
% who received visits related to health during the past year	1	8	0	9	4	4
% who attended a health related demonstration/activity during the past year	8	20	5	52	57	27
Most important topics of health demonstrations/activities						
% Vaccinations	3	9	2	41	53	20
% Diarrhoea	0	0	0	1	0	0
% Aids	3	10	0	2	0	3
% Malaria	1	0	0	0	0	0
% Maternal/child health/ growth	1	1	1	1	2	1
% Sanitation and water	0	0	2	0	1	1
% Family planning	0	0	1	1	0	0
% Vaccinations/aids/family planning	0	0	0	6	0	1
% Food demonstrations	0	0	0	0	1	0

TABLE 2: Agricultural activities of the mother/primary caretaker of children under five

	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussend n=140	TOTAL n=780
Mean number of farm plots of the household (SD)	2.2 (1.1)	2.9 (2.3)	2.3 (1.5)	2.1 (1.3)	2.2 (1.2)	2.3 (1.3)
% of mothers with their own farm plots	54	74	67	50	61	60
Mean number of farm plots of mothers with plots	1.2 (0.5)	1.6 (1.0)	1.2 (0.5)	1.4 (1.2)	1.4 (1.2)	1.3 (0.8)
Maize						
% who planted	54	73	67	50	61	59
% who consumed	54	73	67	50	61	59
% who sold/exchanged	25	18	40	25	26	27
Beans						
% who planted	31	51	49	35	47	42
% who consumed	31	51	49	35	47	42
% who sold/exchanged	8	7	14	8	11	9
Groundnut sesame						
% who planted	28	69	53	35	46	43
% who consumed	28	68	53	35	46	42
% who sold/exchanged	7	25	19	9	11	9
Potatoes/cassava/rootcrops						
% who planted	44	41	55	43	54	47
% who consumed	42	41	55	43	54	47
% who sold/exchanged	1	7	21	5	28	18
At least one kind of vegetable						
% who planted	24	35	47	29	46	33
% who consumed	24	34	41	29	46	33
% who sold/exchanged	7	2	11	9	16	9
At least one kind of fruit						
% who planted	25	6	17	13	20	18
% who consumed	25	6	17	13	20	18
% who sold/exchanged	18	0	10	7	11	11

TABLE 3: Oil consumption

Oil consumption	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
Number of times when the main meal is prepared with oil						
% Never	1	7	0	0	0	1
% Every day	15	6	15	29	23	18
% Two to six times per week	29	10	34	42	22	29
% Once per week	4	6	9	6	5	6
% Various times per month	18	27	19	10	19	18
% Irregular/seasonally/sometimes	32	41	21	13	31	29
Number of times when locally pressed sunflower/ sesame oil used						
% Never	99	97	100	100	100	99
Source of oil most recently used						
% Bought	96	87	96	96	93	94
% Exchanged	1	0	1	1	1	1
% Received donation	1	10	2	1	1	2
% Who got from press	0	0	0	0	1	0
% Gift/Home produced	2	3	2	1	4	2
Type of oil obtained most recently						
% Sesame	7	23	9	10	9	10
% Colza	86	70	89	82	77	82
% Sunflower	0	0	0	0	1	0
% Coconut	0	0	0	1	9	2
% Groundnut	5	3	0	5	2	3
% Vegetable oil	0	0	0	1	9	2
Oil consumption						
Mean millilitres/day/family	91(71)	74(52)	79(63)	74(68)	88(67)	83(66)
Mean millilitres/person/day	15(11)	13(10)	16(16)	13(11)	15(13)	14(12)
% of mothers who know at least two benefits of oil consumption	16	17	31	24	14	20
Benefits of consuming oil*						
% Taste	67	72	90	67	68	68
% Softens food	6	4	5	5	4	5
% Has vitamins	19	9	40	23	22	22
% Give energy	9	8	20	13	8	11
% Help with blood circulation	3	3	2	1	2	2
% Satisfies hunger	0	0	0	0	0	0
% Increase weight	4	2	5	5	1	3
% Give health	5	9	5	11	1	7
% Cooks well	1	1	0	0	0	7
% Improves accompanying foods	0	0	0	0	1	0
% Not answered	2	1	0	0	1	1
% Do not know	3	3	5	2	4	3

* Respondents could give three answers to this question - columns do not add to one hundred

TABLE 4 Food intakes on the day preceding the survey

Type and frequency of intake	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen- denga n=140	TOTAL n=780
The rice meal was						
% Normal	81	96	95	96	94	91
% Special	18	3	3	3	6	9
% Staple food (cereals)	99	100	100	100	100	100
% Leaves	40	49	36	11	39	35
% Beans/groundnut/sesame	36	73	62	37	61	50
% Vegetables	68	73	90	89	84	79
% Fruits	32	6	9	12	16	18
% Meat/poultry/fish	48	35	45	61	52	45
% Eggs	2	3	2	3	2	3
% Oil/fat	45	24	53	67	46	48

TABLE 5. Frequency of food intake during the seven days preceding the survey

Food item and frequency of intake	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
Maize						
% did not eat	0	13	4	0	1	3
% ate once per week	0	2	2	1	1	1
% twice to six times per week	28	40	39	31	31	32
% once per day	1	6	6	5	4	4
% twice per day	71	40	49	63	62	60
Mapira						
% did not eat	67	16	37	57	44	49
% ate once per week	10	14	9	10	14	11
% twice to six times per week	17	33	36	29	37	29
% once per day	2	11	5	3	5	5
% twice per day	1	2	1	1	0	1
Sweet potatoes/other tubers						
% did not eat	12	28	7	5	4	11
% ate once per week	11	19	10	7	5	9
% twice to six times per week	28	40	45	47	34	37
% once per day	37	21	35	37	45	36
% twice per day	13	1	3	4	12	8
Bread						
% did not eat	74	84	80	54	68	71
% ate once per week	18	5	12	14	16	15
% twice to six times per week	7	2	8	30	14	12
% once per day	1	0	0	2	1	1
% twice per day	1	0	0	0	1	0
Rice						
% did not eat	72	88	65	62	64	70
% ate once per week	18	11	19	19	11	16
% twice to six times per week	10	1	17	19	24	14
% once per day	0	0	0	1	0	0

TABLE 5 (cont): Frequency of food intake during the past seven days

Food item and frequency of intake	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
Leaves						
% did not eat	8	7	11	15	6	9
% ate once per week	9	12	9	16	7	10
% twice to six times per week	61	62	62	64	77	65
% once per day	8	5	12	1	1	5
% twice per day	14	15	7	4	9	10
Orange colored vegetables						
% did not eat	74	69	51	83	78	72
% ate once per week	13	13	30	11	11	15
% twice to six times per week	11	15	17	5	11	12
% once per day	2	2	0	0	0	0
% twice per day	0	0	0	0	0	0
Kale/lettuce						
% did not eat	16	26	11	3	4	12
% ate once per week	19	29	14	15	10	17
% twice to six times per week	56	45	68	73	76	63
% once per day	4	0	5	7	8	5
% twice per day	5	1	3	3	2	3
Other vegetables						
% did not eat	23	14	8	7	8	13
% ate once per week	12	18	1	15	11	13
% twice to six times per week	36	54	49	38	43	42
% once per day	8	6	19	17	14	12
% twice per day	22	9	15	23	24	20
Orange colored fruits						
% did not eat	68	93	83	65	61	72
% ate once per week	19	6	12	21	16	16
% twice to six times per week	10	1	3	11	19	10
% once per day	2	0	1	1	1	1
% twice per day	1	0	1	1	2	1
Other fruits						
% did not eat	12	74	49	29	19	32
% ate once per week	14	17	23	25	16	19
% twice to six times per week	42	8	25	43	50	36
% once per day	9	1	0	1	6	4
% twice per day	23	0	3	1	9	10

TABLE 5 (cont): Frequency of food intake during the past seven days

Food item and frequency of intake	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
Beans						
% did not eat	33	26	32	33	17	29
% ate once per week	30	26	21	27	24	26
% twice to six times per week	34	45	42	40	57	42
% once per day	2	0	3	0	1	1
% twice per day	1	3	2	0	1	1
Groundnut/caju/sesame						
% did not eat	37	5	10	25	17	22
% ate once per week	16	7	8	12	7	11
% twice to six times per week	34	46	45	49	58	45
% once per day	2	13	15	0	5	7
% twice per day	10	30	22	0	10	15
Meat fish poultry						
% did not eat	24	32	25	7	23	22
% ate once per week	38	22	33	21	31	31
% twice to six times per week	35	45	40	68	45	45
% once per day	2	2	1	3	0	2
% twice per day	1	0	1	1	1	1
Eggs						
% did not eat	58	81	84	73	76	72
% ate once per week	25	16	12	15	16	19
% twice to six times per week	16	3	3	8	8	9
% once per day	0	0	0	0	0	0
Oil/ fat						
% did not eat	31	56	27	7	41	31
% ate once per week	14	13	18	14	7	13
% twice to six times per week	40	25	42	53	28	39
% once per day	5	4	3	13	4	6
% twice per day	10	3	11	13	20	11
Salt						
% did not eat	0	1	0	1	0	0
% ate once per week	0	0	1	0	0	0
% twice to six times per week	2	0	1	0	1	1
% once per day	0	4	7	7	1	3
% twice per day	97	96	92	93	98	95

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TABLE 6: Sufficiency of food intake

Percentage of households who think that their present intake is sufficient	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
% Maize	96	92	94	95	99	96
% Mapira	62	84	79	59	72	69
% Sweet potato/Other tubers	81	67	88	87	95	84
% Bread	8	3	3	15	14	9
% Rice	15	3	22	18	29	17
% Beans	94	93	97	92	99	95
% Orange vegetables	51	45	62	39	48	49
% Kale/lettuce etc	72	59	76	85	80	70
% Other vegetables	55	64	73	71	79	67
% Orange fruits	46	34	35	52	49	44
% Other fruits	82	16	48	51	73	60
% Beans	56	69	68	49	75	62
% Groundnut sesame/caju	53	84	70	51	76	66
% Fish/meat/poultry	50	38	38	51	48	46
% Eggs	42	22	17	19	25	27
% Oil/fat	25	17	29	39	36	29
% Salt	98	99	100	100	100	99

TABLE 7. Breast feeding practices

Incidence and practices	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
% of households who have at least one child under five that is still breast-feeding	66	74	69	62	69	67
Number of households with children under five that are still breast-feeding	n=166	n=81	n=90	n=93	n=96	n=526
% of children under five being breast-fed	51	57	58	48	59	54
Number of children being breast-fed	n=167	n=81	n=92	n=93	n=98	n=531
% of children who started breast-feeding within the first hour of birth	45	52	51	50	44	48
Mean age when solid food has to be introduced (SD)	4.5(2.0)	4.1(2.2)	4.4(2.2)	4.1(1.9)	4.4(2.2)	4.3(2.1)
Mean age when liquids has to be introduced (SD)	3.9(2.3)	4.2(2.5)	3.8(2.2)	3.6(2.1)	3.4(2.3)	3.8(2.3)
Foods/Fluids given in addition to mothers milk on the day preceding the survey						
% water	78	75	78	81	84	79
% water with sugar	1	1	3	1	3	2
% juice	3	0	0	2	5	4
% tea (including traditional remedies)	10	10	13	15	14	12
% any type of milk	1	0	1	1	2	1
% ORS	2	1	2	0	1	1
% other liquids	5	5	10	13	9	8
% cereal porridge	61	73	85	73	72	71
% porridge of potato/other tubers	9	3	9	9	9	8
% beans	8	15	10	9	12	10
% eggs	5	0	1	3	7	4
% fish/birds/meat	15	10	15	23	14	15
% groundnut/sesame/caju	11	27	20	14	18	17
% other solid/semi-solid foods	37	44	53	45	37	42

TABLE 7 Breast feeding practices (cont)

Incidence and practices	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
Foods/fluids given during the past seven days % who gave at least once						
% water	80	76	83	82	88	81
% any type of milk	3	1	2	2	2	2
% SRO	6	2	4	4	2	4
% other liquids	25	16	27	32	26	26
% cereal porridge	63	78	87	76	73	74
% porridge of potato/other tubers	11	6	9	12	11	11
% beans	22	21	18	24	21	21
% groundnut/sesame/caju	25	39	28	29	33	30
% eggs	18	5	9	11	12	12
% fish/birds/meat	29	26	22	32	30	28
other solid, semi-solid foods	61	49	54	47	57	45

TABLE 8. Breast-feeding practices of children of four months and younger

PRACTICE	DISTRICT					TOTAL n=102
	Gondola n=30	Guro n=13	Barue n=13	Manica n=24	Sussen n=22	
% of children 4 months and younger who took liquids, solids, semi-solids in addition to breastmilk during the preceding seven days	-	-	-	-	-	65
% of children 4 months and younger who took liquids in addition to breastmilk during the preceding seven days	-	-	-	-	-	37
% of children 4 months and younger who took solids/semi-solids in addition to breastmilk during the preceding seven days	-	-	-	-	-	52
Food items given during the past seven days to who gave at least once						
% water	-	-	-	-	-	31
% any type of milk						1
% SRO						2
% other liquids						12
% cereal porridge						50
% porridge of potato/other tubers						1
% beans						2
% groundnut, sesame, caju						1
% eggs						1
% fish/birds/meat						2
% other solid/semi-solid foods						6

TABLE 9 Weaning foods given to children older than four months

PRACTICE	DISTRICT					
	Gondola n=137	Guro n=68	Barue n=76	Manica n=69	Sussen n=76	TOTAL n=
Foods/Fluids given in addition to mothers milk on the day preceding the survey						
% water	91	90	88	97	97	92
% water with sugar	2	2	4	1	4	2
% juice	4	3	4	6	7	5
% tea (including traditional remedies)	11	10	12	16	15	12
% any type of milk	2	0	1	1	3	1
% ORS	2	2	3	0	1	1
% other liquids	7	6	12	15	12	10
% cereal porridge	66	78	88	77	82	77
% porridge of potato/other tubers	11	3	10	12	12	10
% beans	10	18	12	12	15	12
% eggs	7	0	1	4	9	5
% fish/birds/meat	18	12	16	30	17	19
% groundnut/sesame/caju	14	32	24	19	24	21
% other solid/semi-solid foods	45	50	62	59	46	51
Foods/fluids given during the past seven days % who gave at least once						
% water	91	91	91	97	100	94
% any type of milk	4	1	3	1	3	3
% SRO	7	3	5	4	3	5
% other liquids	30	18	29	37	30	29
% cereal porridge	68	84	91	81	83	79
% porridge of potato/other tubers	15	7	8	16	14	13
% beans	26	25	20	32	26	26
% groundnut/sesame/caju	29	47	32	39	42	36
% eggs	21	6	8	14	16	14
% fish/birds/meat	35	31	24	43	37	34
% other solid/semi-solid foods	49	56	63	62	46	54

TABLE 10 Incidence of diarrhoea and practices with children under five who had diarrhoea during past two weeks

VARIABLE	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussenda denga n=140	TOTAL n=780
% of households with at least one child who had diarrhoea during the past two weeks	28	23	27	23	19	25
Number of children under five who had diarrhoea	n=72	n=25	n=35	n=35	n=26	n=193
Percentage of children under five who had diarrhoea	22	18	22	18	16	20
Quantities of drink/food given by those who gave¹						
Mother's milk	n=51	n=20	n=26	n=23	n=19	n=139
% Less than usual	-	-	-	-	-	4
% The same quantity	-	-	-	-	-	42
% More than normal	-	-	-	-	-	12
% Stopped	-	-	-	-	-	6
Other liquids	n=67	n=23	n=34	n=33	n=25	n=182
% Less than usual	-	-	-	-	-	36
% The same quantity	-	-	-	-	-	25
% More than normal	-	-	-	-	-	30
% Stopped	-	-	-	-	-	8
Semi-solids and solids	n=69	n=24	n=33	n=33	n=25	n=184
% Less than usual	-	-	-	-	-	46
% The same quantity	-	-	-	-	-	29
% More than normal	-	-	-	-	-	4
% Stopped	-	-	-	-	-	21
% who looked for help during the illness	79	92	83	89	81	83
Kinds of treatments given						
% received SRO	28	44	57	49	27	39
% home made mixture of salt/water/sugar	8	12	11	17	8	11
% rice water or water of other cereal	3	0	6	9	4	4
% traditional remedies, teas etc	44	16	26	26	42	34
% modern medicines	40	72	60	49	31	48
% blessed water	6	0	0	0	8	3

¹ This excludes cases where the question was non-applicable. For example children who were not breast-feeding are not reflected in the percentages on the intake of breastmilk.

TABLE 11 General practices when children have diarrhoea

PRACTICE	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen- denga n=140	TOTAL n=780
% Start to give fluids immediately	5	1	2	6	0	3
% Give them more fluids than normally	6	4	6	1	1	4
% Give them more to drink more frequently	5	1	1	3	2	3
% Give them more food than normally	4	3	5	3	6	4
% Give them food more frequently in small quantities	4	3	8	4	4	5
Take the child to the hospital/clinic	81	85	81	81	79	82
% Give them ORS	29	36	42	51	25	36
% Stop with fluids	0	1	1	0	0	0
% Stop with food	0	1	0	0	0	0
% Give them traditional medicines	34	22	31	22	36	30
% Give them modern medicines	36	33	44	49	27	38
Other	20	20	15	10	12	16

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TABLE 12. When do they look for help during a bout of diarrhoea

SIGN USED TO GO AND LOOK FOR HELP IN TREATMENT OF DIARRHOEA	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussendenga n=140	TOTAL n=780
% Vomits	13	11	16	15	16	14
% Fever	36	36	30	40	34	35
% Dry mouth	1	2	1	1	0	1
% Sunken eyes	8	16	11	15	7	11
% Pass little urine	1	0	0	1	1	1
% Diarrhoea of 4 days or more	18	15	6	9	2	11
% Blood in feces	8	6	5	2	4	6
% Loss of appetite	18	16	17	18	13	17
% Weakness or tiredness	34	28	33	37	2	34
% Watery stools and constant diarrhoea	54	60	60	65	74	62
% Other	10	7	9	14	6	9

TABLE 13. Practices after the diarrhoea has stopped

PRACTICE	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussendenga n=140	TOTAL n=780
% Give them food more frequently in small quantities	19	34	21	24	25	23
% Give them more than they normally eat	21	18	21	23	16	20
% Give them food with more calories (e.g. oleo, sugar)	14	9	11	25	14	15

TABLE 14 Dietary habits

	DISTRICT					
	Grand total n=250	Chitwan n=110	Bharatpur n=130	Manjeri n=150	Sussex- Bharatpur n=140	TOTAL n=780
Family members who receive priority when there is not enough food in the house						
% Men	32	51	34	27	3	35
% Women	3	1	2	0	1	2
% Children	53	37	40	55	52	49
% Adults	0	0	0	1	0	0
% Nobody - equally divided	8	8	15	12	16	12
% Husband and children	4	3	3	4	0	3
% who could give an answer when asked what should be done when a child's weight does not increase	16	18	13	17	11	14
Actions that should be taken when a child's weight does not increase						
% Give food more frequently	14	20	19	13	18	16
% Put more oil in food	18	12	12	22	6	15
% Give food with proteins (eggs, milk, beans, fish etc)	40	32	41	55	40	42
% Take to hospital	48	47	43	42	42	45
% Traditional medicines (tea made of roots etc)	6	7	9	4	12	7
% Modern medicines	11	9	23	20	11	15
% Other	17	17	13	27	27	16

TABLE 15 Knowledge about foods that 'give energy'

FOOD	DISTRICT					
	Comoda n=250	Gerung n=110	Harau n=130	Maninjau n=150	Susunan deta n=140	TOTAL n=780
% Maize	13	15	9	1	2	8
% Other cereals Mean no. Different cereals mentioned	72	68	82	87	81	78
% Sweet potato and other tubers	34	45	39	46	44	40
% Bread	17	6	15	17	20	16
% Beans	6	7	7	10	14	9
% Groundnut/sesame/caju	16	16	15	16	17	16
% Fish	6	14	12	9	11	10
% Meat			15	-	2	5
% Eggs	12		8	-		11
% Eggs	16	10	16	12	20	15
% Milk	6	2	5	4	7	5
% Mother's milk	13	6	11	7	19	12
% Fruits Mean no. Different fruits	10	6	9	12	22	11
% Leaves Mean no. Different leaves	11	6	8	8	13	9
% Vegetable Mean no. Different vegetables	14	11	22	31	16	18
% Oil/fat/coconut	20	15	26	29	17	22
% Sugar and honey	4	2	8	-	11	6

TABLE 16: Knowledge about foods that helps with the growth of children

S.No	DISTRICT					
	Ulundulu n=250	Umtata n=110	Rhine n=130	Manica n=150	Nasser District n=140	TOTAL n=780
1) Who gave a response/ knew	52	14	18	8	8	12
% Maize	51	58	59	61	64	58
% Other cereals Mean no. Different cereals mentioned	28	43	32	43	36	35
% Sweet potato and other tubers	12	43	15	12	14	12
% Bread	5	9	9	16	16	10
% Beans	12	13	7	17	15	13
% Groundnut/sesame/canu	4	9	12	9	5	7
% Lentils	-	-	-	-	2	-
% Nuts	-	4	12	4	18	4
1) Poultry	5	2	8	5	9	6
% Eggs	15	9	19	15	20	16
% Milk	18	12	27	30	21	22
% Mother's milk	25	24	31	24	23	25
% Fruits Mean no. Different fruits	12	5	-	22	16	13
% Leaves Mean no. Different leaves	4	2	4	4	6	5
% Vegetable Mean no. Different vegetables	8	9	7	22	14	12
% Oil/fat/seed/rut	15	-	16	25	11	15
% Sugar and honey	6	6	13	15	8	9

TABLE 17 Knowledge about foods that 'defend against disease'

FOOD CATEGORY	DISTRICT					
	Grindola n=250	Chiriqui n=110	Manabí n=130	Manabí n=150	Sussex - denga n=140	Yaguajay n=780
% Who knew/gave a response	50	62	49	36	36	46
% Maize	22	18	33	26	29	26
% Other cereals	14	15	11	19	16	15
Mean no. Different cereals mentioned	11	11	11	11	11	11
% Sweet potato and other tubers	6	1	5	5	1	4
% Bread	4	5	5	11	9	7
% Beans	7	1	3	6	9	6
% Lentils	2		5	4	6	3
% Fish	9	4	3	4	6	6
% Meat	8	5	8	8	8	8
% Poultry	2	3	2	3	8	4
% Eggs	13	6	13	10	11	11
% Milk	10	6	19	14	14	12
% Mother's milk	12	8	19	17	22	15
% Fruits	16	5	3	19	14	12
Mean no. Different fruits	11	13	13	15	14	15
% Leaves	5	2	2	4	1	3
Mean no. Different leaves	12	7	11	11	10	11
% Vegetable	6	5	5	19	6	9
Mean no. Different vegetables	15	15	11	12	12	13
% Oil (palm/coconut)	13	8	8	16	11	12
% Sugar and honey	6	6	11	11	9	8

TABLE 18 Anthropometric measures

ANTHROPOMETRY	DISTRICT					
	Gondola n=250	Guro n=133	Barue n=316	Manica n=190	Sussendenga n=158	TOTAL n=1087
% Of children with edema in both feet	2	5	1	3	2	2
% Of children under five measured/weighed during the survey	100	100	100	100	100	100
% Of children with road to health chart	71	92	78	92	75	80
% Of children with chart who were weighed within the last 4 months	49	61	57	57	60	56
Height for age (0-59 mnths) Z-score <-2 (95% CI) Z-score <-3 (95% CI)	n=309 55 (49-61) 25 (21-29)	n=133 59 (51-68) 25 (21-29)	n=316 52 (46-58) 23 (19-27)	n=190 42 (35-49) 7 (4-10)	n=158 40 (32-48) 17 (11-23)	n=948 50 (47-53) 22 (19-24)
Height for age (5-15 months) Z-score <-2 (95% CI) Z-score <-3 (95% CI)	n=315 8 (6-12) 2 (0-3)	n=131 7 (3-13) 2 (0-6)	n=324 11 (8-15) 4 (2-7)	n=191 7 (4-12) 1 (0-3)	n=154 5 (2-10) 0 (0)	n=953 8 (6-10) 1 (1-2)
Weight for age (0-59 mnths) Z-score <-2 (95% CI) Z-score <-3 (95% CI)	n=319 40 (35-46) 13 (10-18)	n=135 44 (35-53) 16 (11-24)	n=318 38 (32-43) 13 (9-18)	n=191 27 (21-34) 7 (4-12)	n=161 27 (21-35) 10 (6-15)	n=965 36 (33-39) 12 (10-14)
Height for age (24-59 mnths) Z-score <-2 (95% CI) Z-score <-3 (95% CI)	n=42 60 (51-68) 32 (25-41)	n=65 65 (52-76) 22 (13-34)	n=52 61 (52-68) 31 (23-38)	n=8 49 (39-60) 19 (12-29)	n=58 43 (30-57) 21 (12-34)	n=47 56 (51-61) 26 (22-31)
Weight for Height (24-59 mnths) Z-score <-2 (95% CI) Z-score <-3 (95% CI)	n=143 5 (2-10) 1 (0-6)	n=64 2 (0-10) 2 (0-10)	n=152 11 (6-17) 4 (2-9)	n=89 3 (1-10) 0 (0)	n=56 4 (1-13) 0 (0)	n=428 5 (3-8) 1 (1-3)
Weight for age (24-59 mnths) Z-score <-2 (95% CI) Z-score <-3 (95% CI)	n=145 35 (28-44) 12 (7-18)	n=65 31 (20-44) 12 (6-23)	n=152 30 (23-38) 8 (4-14)	n=89 23 (15-33) 5 (1-12)	n=58 24 (14-38) 9 (3-20)	n=433 30 (25-34) 9 (7-13)

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APPENDIX B

QUESTIONNAIRE: NUTRITION COMPONENT

AFRICARE: LINHA DE BASE DE NUTRIÇÃO E SAÚDE MANICA JUNHO 1997

AVISO

A Sra tem direito a não participar nesta entrevista. A sua participação é inteiramente voluntária. No entanto vale a pena indicar que, caso de Sra participar na entrevista, toda a informação recolhida será **completamente confidencial** -em nenhuma circunstância o seu nome será associado a nenhuma resposta.

Aceita participar nesta entrevista? _____

Nome da entrevistada. _____	A0001
Aldeia Bairro Zona _____	A0002
Localidade _____	
Posto administrativo _____	
Distrito _____	A0003

Nome do Inquiridor _____

Data da entrevista: _____

Revisado no campo por _____

Data. _____

MACHAMBAS DA SENHORA

	Quantas machambas este agregado familiar tem?	B0001
	Você ou alguém da família tem as suas próprias machambas? (1-Sim 2-Não)	B0002
	(Se disser sim) quantas machambas tem? (# de machambas, N/A)	B0003

Se não tem machamba própria, passar a secção C

Cultura	Codigos das culturas -não preencher-	Que culturas semeia na(s) sua(s) machamba(s)? (1-sim, 2-não)	Qual é o destino dos produtos da(s) sua(s) machamba(s)? (1-sim, 2-não N/A)		O que gostaria, se possível, de semear nesta(s) machamba(s)? (1-sim, 2-não)
			Consumo	Venda ou troca	
Milho	B0101	B0102	B0103	B0104	B0105
Cereais importantes	B0201	B0202	B0203	B0204	B0205
	B0301	B0302	B0303	B0304	B0305
Legumes	B0401	B0402	B0403	B0404	B0405
Amendoim/gergelim	B0501	B0502	B0503	B0504	B0505
Hortaliças (as mais importantes)	B0601	B0602	B0603	B0604	B0605
	B0701	B0702	B0703	B0704	B0705
Frutas (as mais importantes)	B0801	B0802	B0803	B0804	B0805
	B0901	B0902	B0903	B0904	B0905
Batatas mandioca outras raízes	B1001	B1002	B1003	B1004	B1005
Outro -especificar-	B1101	B1102	B1103	B1104	B1105

NUTRIÇÃO BÁSICA

23	Ontem, o que se cozinhou nesta casa? (o que é que a sua família comeu ontem?) Não)	(1-Sim; 2-
	Milho/outros cereais (arroz, milho, trigo, arroz)	E2301
	Folhas	E2302
	Feijão/amendoim/gergelim	E2303
	Outros (tomate, cebola, abóbora e outros legumes)	E2304
	Frutas (especificar) _____	E2311 E2305
	Carne/aves/peixe	E2306
	Ovos	E2307
	Oleo/gorduras	E2308
	Outro especificar _____	E2312 E2309
24	Era uma refeição normal ou especial? Especial)	(1-Normal 2- Especial) E2401

25	Como descreve na sua família o consumo típico (geral) de ...	(Se não come ou o consumo foi insuficiente) porque?	Nos últimos 7 dias, quantas vezes a sua família comeu	
Ver o seguinte	1 Suficiente 2 Insuficiente 3 Muito insuficiente 4 Não come 5 Outro-esp _____	1 Não existe 2 Muito pouco 3 Não costuma comer 4 Outro -esp _____ N/A	1 Não 2 Uma vez 3 2 vezes ou mais 4 Uma vez por dia 5 2 vezes ou mais por dia	
Milho? (farinha, maçaroca)	E0101	E0102	E0103	
Mapira, outros cereais?	E0201	E0202	E0203	
Batata doce, outros raízes?	E0301	E0302	E0303	
Pão?	E0401	E0402	E0403	
Arroz?	E0501	E0502	E0503	
Folhas?	E0601	E0602	E0603	
Hortaliças	alaranjadas, abóbora, cenoura	E0701	E0702	E0703
	couve, alface, tsunga	E0801	E0802	E0803
	outras: tomate, cebola...	E0901	E0902	E0903
Frutas	alaranjadas, papava, mango	E1001	E1002	E1003
	outras: banana, laranja...	E1101	E1102	E1103
Feijões?	E1201	E1202	E1203	
Amendoim/gergelim/castanha do caju?	E1301	E1302	E1303	
Peixe/carne/aves?	E1401	E1402	E1403	
Ovos?	E1501	E1502	E1503	
Oleo/gorduras?	E1601	E1602	E1603	
Sal?	E1701	E1702	E1703	
Outro? E1700 especificar _____	E1801	E1802	E1803	

SERVIÇOS DE EXTENÇÃO

1	Neste ano, recebeu visitas em casa de alguma pessoa ligada à saúde? (1-Sim 2-Não)	C0901
	(Se teve visita) era de quem? Não N/A	(1-Sim, 2-Não)
	Direcção de Saúde (DDS ou DPS)	C1001
	Concern	C1002
	UNICEF	C1004
	Redd Barna	C1005
	Africare	C1006
	PAC (Programa de Activistas Culturais)	C1007
	ADPP	C1008
	Outro (esp) _____ C1010	C1009
11	Neste ano, viu alguma demonstração por parte de alguma pessoa ligada à saúde? (1-Sim 2-Não)	C1101
	Se viu uma demonstração o que foi demonstrado?	C1201
D CONSUMO DE OLEO		
3	Quantas pessoas costumam comer nesta casa? (# de pessoas)	D1301
14	Quantas vezes a sua família cozinha a refeição principal com óleo? 1 Nunca 2 Todos os dias 3 2 vezes ou mais por semana 4 Uma vez por semana 5. Algumas vezes por mês 6 De vez em quando (esp) 7 Depende da época (esp)	D1401
15	Quantas vezes a sua família utiliza óleo de girassol/gergelim da prensa vizinha própria? 1 Nunca 2 Todos os dias 3 2 vezes ou mais por semana 4. Uma vez por semana 5 Algumas vezes por mês 6 De vez em quando(esp) 7. Depende da época -especificar	D1501
	Quando foi a última vez que conseguiu óleo para cozinhar? -anotar o dia exacto-	D1601
17	Cómo conseguiu este óleo? 1 Comprou 2 Trocou 3. Recebeu doação 4 Conseguiu da prensa 5. Outro especificar	D1701
18	Que tipo de óleo foi? 1. Girassol 2. Colza 3. Azeite 4. Gergelim 5 Outro especificar	D1801
19	Que quantidade comprou ou recebeu? Anotar a quantidade _____ e unidade _____ Altura _____ cm Diâmetro _____ cm	D1901
20	Resta óleo? (1-Sim 2- Não)	D2001
21	(Se resta óleo) que quantidade de óleo tem agora? (Data da entrevista) Anotar a quantidade _____ e unidade _____ Altura _____ cm Diâmetro: _____ cm	D2101 D2102
22	(Se não resta óleo) quantos dias durou? (# de dias, N/A)	D2201

senhora está a amamentar? (1-Sim 2-Não)

(1-Sim 2-Não)

se não está a amamentar passar a secção G

27	Data de nascimento (mês e ano)	F2701	F2702	
28	Quanto tempo depois do nascimento do a [NOME] começou a amamentar?	Anotar as horas: (Se mais de 24 horas, anotar os dias: (Se nunca amamentou por '99')	F2801	F2802
		1- Sim 2- Não	1- Sim 2- Não	
29	No período de ontem, que deu ao [NOME] além do leite materno? -ler as opções de obter a resposta da mãe ou inferir sobre água e chá- -se a mãe não deu nada, anotar "não" para todos os alimentos-	água comum	F2901	F2902
		água com açúcar	F2903	F2904
		sumo	F2905	F2906
		chá (inclui remédios tradicionais)	F2907	F2908
		qualquer tipo de leite (além do leite materno)	F2909	F2910
		sais de rehidratação oral	F2911	F2912
		outros líquidos	F2913	F2914
		papinhas de cereais	F2915	F2916
		papinhas de batata/outros raízes	F2917	F2918
		feijão	F2919	F2920
		ovos	F2921	F2922
		peixe aves carne	F2923	F2924
		amendoim/gergelim/castanha do caju	F2925	F2926
outros alimentos sólidos ou semi-sólidos	F2927	F2928		
		Número dos dias	Número dos dias	
30	Nos últimos 7 dias, durante quantos dias deu ao [NOME] o seguinte? -ler as opções- (# dias)	água comum?	F3001	F3002
		qualquer tipo de leite* (além do leite materno)	F3003	F3004
		mistura feita dum pacote? (SRO)	F3005	F3006
		outros líquidos? (sumos, chás, etc)	F3007	F3008
		papinhas de cereais?	F3009	F3010
		papinhas de batata/outros raízes?	F3011	F3012
		feijão?	F3013	F3014
		amendoim/gergelim/castanha do caju?	F3015	F3016
		ovos?	F3017	F3018
peixe, aves, carne?	F3019	F3020		
outros alimentos? (sólidos ou semi-sólidos)	F3021	F3022		

DIARRÉIA

Alguma das suas crianças (menores de 5 anos) teve diarreia nas últimas duas semanas? (1-Sim, 2-Não) -se não passar a secção 11-

Quando [NOME] teve diarreia		1- Sim 2- Não	1- Sim 2- Não	1- Sim 2- Não	
Quando [NOME] teve diarreia, que lhe deu para beber ou comer?	leite materno	G3201	G3202	G3203	
	outros líquidos	G3204	G3205	G3206	
	alimentos semi-sólidos ou sólidos	G3207	G3208	G3209	
		1-Menos de costume? 2-A mesma quantidade? 3-Mais de costume? 4-Parou? N/A	1-Menos de costume? 2-A mesma quantidade? 3-Mais de costume? 4-Parou? N/A	1-Menos de costume? 2-A mesma quantidade? 3-Mais de costume? 4-Parou? N/A	
33	Quando [NOME] teve diarreia, lhe amamentou ... -ler as opções menos a última-	G3301	G3302	G3303	
34	Quando [NOME] teve diarreia, lhe deu a comer ... -ler as opções menos a última-	G3401	G3402	G3403	
35	Quando [NOME] teve diarreia, lhe deu líquidos além do leite materno ... -ler as opções menos a última-	G3501	G3502	G3503	
		1- Sim 2- Não	1- Sim 2- Não	1- Sim 2- Não	
36	Quando [NOME] teve diarreia, procurou conselhos ou tratamento para esta diarreia?	G3601	G3602	G3603	
7	O que foi dado para tratar a diarreia? -se não foi dado nada, anotar não para todas as opções-	SRO (líquido feito dum pacote especial de sais)	G3701	G3702	G3703
		mistura caseira de água, açúcar e sal	G3704	G3705	G3706
		água de arroz/outro cereal	G3707	G3708	G3809
		medicamentos tradicionais como chá de ervas/de raízes	G3710	G3711	G3712
		medicamentos modernos (antibióticos)	G3713	G3714	G3715
		outro -especificar- G3700	G3716	G3717	G3718

CONHECIMENTOS SOBRE A DIARREIA

Na sua experiencia, que deve fazer quando a criança tem diarreia? (Se não sabe, anotar "não" para todas as opções)		1-Sim	2-Não
		H3801	
Dar-lhe de beber mais de costume		H3803	
Dar-lhe de beber mais vezes em quantidades mais pequenas (frequencia)		H3804	
Dar-lhe de comer mais de costume		H3805	
Dar-lhe de comer mais vezes em quantidades mais pequenas (frequencia)		H3806	
Levar a criança ao hospital/clínica		H3807	
Dar-lhe SRO (líquido feito dum pacote especial de sais)		H3808	
Parar os líquidos		H3809	
Outro -especificar		H3800	H3810
Dar-lhe medicamentos tradicionais		H3811	
Dar-lhe medicamentos modernos		H3812	
Outro -especificar		H3800	H3813
Na sua experiencia, que deve fazer depois da diarreia acabar? (Se não sabe, anotar "não" para todas as opções)		1-Sim	2-Não
		H3901	
Dar-lhe de comer mais vezes em quantidades mais pequenas (frequencia)		H3902	
Dar-lhe de comer mais de costume		H3903	
Dar-lhe alimentos com mais calorias (por óleo, açúcar na comida)		H3904	
Outro -especificar-		H3900	H3905
Quando a sua criança tem diarreia, voce procura conselhos ou tratamento quando? (Se não sabe, anotar "não" para todas as opções)		1-Sim	2-Não
		H4001	
Vômito		H4002	
Febre		H4003	
Boca seca		H4004	
Olhos afundados		H4005	
Poca urina		H4006	
Diarreia de 14 dias ou mais		H4007	
Sangue nas fezes		H4008	
Perda de apetite		H4009	
Fraqueza ou cansaço		H4010	
Outro -especificar		H4000	H4011

ALIMENTAÇÃO/NUTRIÇÃO EM GERAL

	<p>Quando não tem caril suficiente para toda a família, quem tem prioridade? 1) Os homens 3) Crianças 5) Ninguém dividido entre todos 2) As mulheres 4) Adultos 6) Outros especificar _____</p>	I4101		
	<p>Na sua experiência, que deve fazer quando a criança não aumenta de peso? (Se não sabe, anotar "não" para todas as opções)</p>	I4201		
	Dar-lhe de comer mais vezes (frequência)	I4202		
	Dar-lhe mais comida	I4203		
	Dar-lhe mais alimentos com proteina (ovos leite, feijão carne, peixe...)	I4204		
	Medicamentos tradicionais como chá de ervas ou de raízes	I4205		
	Medicamentos modernos como antibióticos	I4206		
	Outro -especificar- _____	I4207 I4208		
43	Qual é a importância do óleo na comida?	I4301		
		I4302		
		I4303		
44	<p>Na sua experiência, quais são os alimentos que... (Se não sabe, anotar "não" para todas as opções)</p>	<p>Dão força? 1-Sim 2-Não</p>	<p>Ajudam o crescimento da criança? 1-Sim 2-Não</p>	<p>Defendem Criança de algumas doenças? 1-Sim 2-Não</p>
	milho	I0101	I0102	I0103
	Outros cereais -especificar- _____ I4401	I0201	I0202	I0203
	Cereal de milho ou outros raízes	I0301	I0302	I0303
	Feijão	I0401	I0402	I0403
	Arroz	I0501	I0502	I0503
	Cebola	I0601	I0602	I0603
	Amendoim, gergelim/castanha do caju	I0701	I0702	I0703
	Peixe	I0801	I0802	I0803
	Carne	I0901	I0902	I0903
	Aves	I1001	I1002	I1003
	Ovos	I1101	I1102	I1103
	Leite	I1201	I1202	I1203
	Leite materno	I1301	I1302	I1303
	Frutas -especificar- _____ I4402	I1401	I1402	I1403
	Folhas -especificar- _____ I4403	I1501	I1502	I1503
	Hortaliças -especificar- _____ I4404	I1601	I1602	I1603
	Óleo/coco/outras gorduras	I1701	I1702	I1703
	Açúcar/mel	I1801	I1802	I1803
Outro -especificar- _____ I4405	I1901	I1902	I1903	

CONHECIMENTOS SOBRE A DIETA DAS CRIANÇAS QUE MAMAM

40	A partir de quantos meses de idade a mãe tem que começar a dar alimentos além do leite materno?	J4501
	A partir de quantos meses de idade a mãe tem que começar a dar outros líquidos além do leite materno?	

CARACTERÍSTICAS DA SENHORA

1	Quantos anos tem a senhora? (Idade da mãe)	A0101
2	Quantos anos completou na escola? (Qual e a classe que completou?)	A0201
3	Faz algum trabalho que lhe dá rendimentos?	1.Sim 2.Não
	(Se não faz trabalho que dá rendimentos, anotar "não" para todas as opções)	A0301
	Auto-emprego não agrícola como artesanato olaria carpintaria	A0302
	Trabalho agrícola temporário	A0303
	Venda de produtos agrícolas	A0304
	venda de alimentos feitos em casa (doce, bebidas tradicionais)	A0305
	Empregada doméstica	A0306
	Auto-emprego no comércio (venda de bebidas, fosforos, ...)	A0307
	Trabalho assalariado	A0308
	Outro -especificar- _____	A0310 A0309
4	Qual é a sua religião? 1 Muçulmana 4 Assembleia de Deus 7 Igreja Protestante 10 Nenhuma 2 Católica 5 Igreja evangélica 8 Outras igrejas cristãs 11 Outro-esp 3 Testemunhas Jeová 6 Igreja Batista 9 Religião tradicional	A0401

O E ALTURA

For anotar e medir cada criança nascida desde Junho de 1992

Sexo 1 Masculino 2 Feminino	Data de nascimento (mês e ano)	Altura (cms)	Medida dentada ou em pé? 1-dentada (<90 cm) 2-em pé (>90 cm)	Peso (kgs)	1-dentado nos dois pés? 1-sim 2-não	Resultado 1-Criança medida 2-Doente 3-Ausente 4-Recusou 5-Mãe recusou 6-Outro (especificar)	Tem cartão de saúde? 1- sim 2- nunca teve 3-perdeu	Anotar do cartão se a criança foi pesada nos últimos 4 meses 1-sim 2-não N/A	Anotar quando foi a última vez que a criança recebeu a sula de vitamina A (Data, C)
K0100	K0101	K0102	K0103	K0104	K0105	K0106	K0107	K0108	K0109
K0200	K0201	K0202	K0203	K0204	K0205	K0206	K0207	K0208	K0209
K0300	K0301	K0302	K0303	K0304	K0305	K0306	K0307	K0308	K0309
K0400	K0401	K0402	K0403	K0404	K0405	K0406	K0407	K0408	K0409
K0500	K0501	K0502	K0503	K0504	K0505	K0506	K0507	K0508	K0509

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The situation may however deteriorate slightly during the next twelve months as more than 70% of the maize, cowpea and sorghum producers said that they produced less this year when compared to the previous season

The sale of food crops is another indicator of food security especially in areas where no large scale commercial buying of food crops takes place and where there is good market access. Generally households sell excess production once their own food requirements have been satisfied. Relative to districts such as Maganja da Costa in Zambezia, the sale of food crops in the province was very high (76% of households sold at least one crop). In terms of cultivation and commercialization patterns of food crops, households in Guro not only produced a smaller variety of different crops, but they also sold less. This may be an indication that this district is relatively less food secure than the others. The effect of the lower production levels on household income is compounded by the lack of other income generating activities.

Normally oil consumption patterns give a good reflection of availability of oil on the local market, dietary preferences and the availability of cash for buying oil. In Manica district 78% of households reported using oil at least once a week to prepare the main meal. This was followed with Sussendenga (65%), Barue (59%), Gondola (44%) and Guro (36%). Given other socio-economic indicators the high incidence of oil use in Manica and Sussendenga is probably a function of higher incomes (as reflected by various socio-economic status indicators). Twenty two percent of households in the province said that they use oil for cooking daily.

The vast majority of households who planted oilseeds at some or other time did so within the past 5 years. Sesame is at present far more important than sunflower. During the 1996/1997 season 8% of households planted sesame and 1% sunflower. These differences are most likely related to the fact that sesame forms part of the local diet and can be marketed locally without the need of outside buyers or the presence of oil presses. Gondola and Sussendenga are the most important sesame producing districts. In the province as a whole 27% reported planting sesame at least once before. This number decreased to 14% during the 1995/1996 season and 8% in 1996/1997. The reasons for never cultivating sesame or stopping are very similar throughout all districts and across all the production years. The most important constraints are Lack of seeds (43%), lack of markets (31%) and lack of labor (10%). In most districts the decision to plant sesame was more or less evenly divided between men (41%) and a joint male/female decision (38%). Sesame seed is usually saved from the previous year or bought from friends or neighbors. Problems encountered during 1995/1996 with the storage of seeds were rats (31%) and insects (21%). Thirty eight percent of households had no problems. The vast majority of households who planted sesame (81%) scattered the seeds and did not use rows. 58% intercrop and most of them use maize and sorghum. The biggest production problems experienced during the 1996/1997 season were Insects (28%), rain (23%) and birds (21%). Forty percent of households who produced sesame at least once, sold some of their crop during the past five years. Half of those who sold, sold it locally and a further 30% sold to traders. The biggest marketing problems encountered were lack of buyers (21%), distance to the market (10%) and problems with price (10%).

Sunflower production takes place at such low levels at present that it was not statistically possible to do a lot of district specific analysis. Of the 80 households (10%) who produced sunflower at least once before, the biggest numbers come from Guro, Barue and Manica. In the case of sunflower the most important reasons for ceasing cultivation or never cultivating are lack of seeds (40%), lack of a market (33%) and lack of labor (7%). During 1995/1996 and 1996/1997 the lack of a market superseded the lack of seeds in importance. Sunflower is more clearly a 'male' crop than sesame. Less than 1% of the growers said the decision to grow

EXECUTIVE SUMMARY

The goal of the Africare/USAID Manica Oilseed Food Security Initiative is to significantly enhance food security in five districts in Manica Province. Africare aims to do this through

- * The development of a sustainable, small scale oil seed production and processing industry
- * Increasing levels of awareness and application of improved nutrition and health practices

This baseline survey had two objectives: to provide general information for planning purposes and to obtain baseline values for measuring programme impact. Based on the incidence of stunting in Guro (MSF-CIS 1995) a minimum sample size of 384 households was determined. This figure was doubled to 768 to compensate for the design effect of cluster sampling. The final sample consisted of a random selection of 78 clusters from the target villages. In each of these, 10 households were interviewed. Two separate questionnaires (agriculture and health) were administered in each of the selected clusters. Both surveys used the same methodology, but the actual interviews were conducted in different households. Suggestions as to how the methodology should be modified for the mid-term and final surveys does not fall within the scope of this report. This aspect is discussed in detail in the report prepared by Veronica Fletcher, the consultant who planned and executed the fieldwork.

The main goal of the project is to improve food security through increased household income from oil seed production. Unfortunately it is virtually impossible to measure household income accurately through direct measurement. An estimate of household income using proxy indicators will be made by MSU based on key indicators measured during the survey. This data will be ready by the end of December. The use of unbaked clay bricks in house construction was significantly more prevalent in Manica district. In Guro and Sussendenga relatively high percentages of households also reported using this building method. Expenditures on luxury items such as new clothes and meat normally also reflect household income. Significantly more households in Manica and Sussendenga spent money on new clothes and meat during the past year whilst a relatively high percentage of households in Barue spent money on meat. Given the fact that the crop production profiles (in terms of varieties produced and crops sold) of Manica and Sussendenga are average and both districts reported an above average variety of different off-farm income generating activities, one may assume that these differences in expenditure patterns are more related to income from wage labor and other economic activities than to agriculture.

The sale of food crops is at present the main source of income for most households. Seventy six percent reported earning money from crop sales during the past year. Permanent or temporary employment is the second most important source of income - 49% received income in this way. Significantly more households in Manica than in any other district participated in temporary/permanent employment. The preparation and sale of food from home was the third most important activity (41%) in the province, followed by the sale of animals (32%) and non-agricultural self-employment (32%).

Food shortages were not serious during the past year - half of the households reported some shortages, but the mean duration of these shortages was only 1.7 months. November and December were the months with the most problems. In terms of the duration of shortages and the percentage of households affected, there were no significant differences between districts. This relatively good profile is probably a function of the good agricultural production potential of the province and the high yields of the 1995/1996 season.

sunflower was taken by women 53% male and 46% both males and females. Those who planted sunflower at least once before, mainly sold their crop to traders (37%) Agricom (29%) and Mozambique industrial (23%). Their biggest problems were a lack of buyers (26%), distance to the market (11%), problems with price (11%) and the cost of transport (10%). Cultivation techniques are probably closely related to intercropping practices 42% intercropped and this may be the reason why the intervals between rows and plants were consistently higher than the recommended distances. The biggest sunflower production problems during the 1996/1997 season were birds (31%), insects (23%) and wind (15%).

Considering socio-economic conditions, food security levels and the production of other crops, this project is likely to have the biggest impact on food security if work is concentrated in Gondola, Guro and Barue. The main reasons for this are

- * Even though sunflower production was low, most of the producers with experience in sunflower production came from these districts
- * These districts have little alternative sources of income and poorer socio-economic profiles than Manica and Sussendenga
- * Guro and Barue appear to have low levels of crop production and commercialization in general. The introduction of oil seeds as a cash crop has the potential to make a significant contribution to household income and food security.
- * Considering the relatively lower rainfall levels in certain parts of Guro and its limiting effect on the range of crop alternatives, sesame may be the best way of promoting the growth and development of this particular district.

Three cash crops have potential in the province. These are groundnut, tobacco and cotton. Groundnut is of particular interest because it may be a source of oil in situations where there is excess production and low prices. Of the three crops, only groundnut is presently produced by significant numbers of producers. Forty eight percent of households reported planting groundnut during the past season. The highest proportion of producers was found in Guro (69%) and the lowest in Sussendenga (32%). Relatively few households sold groundnut (66% of the producers) and harvests were reported to be less than the previous year. Less than 2% of the households were involved in cotton and/or tobacco production. Sixty seven percent of the cotton production reported higher yields than the previous year whilst 79% of the tobacco growers said that they harvested less. The latter is probably related to higher than average rainfall in the beginning of 1997.

Nearly half of the households have radios and listen to programmes for small producers. Very few farmers received any visits from agricultural extension staff or saw agricultural demonstrations during the past year. The only significant percentages were recorded in Barue and Sussendenga, where 13% of households received a visit during the past twelve months. Some activity was also recorded in Manica, but in Gondola and Guro there exist nearly no extension support.

The food crops produced by most households were maize (99%), sorghum (71%), sweet potato (65%) and cassava (55%). The mean number of crops planted per household was 5.8% with the lowest mean number of different crops recorded in Guro (5.0) and the highest in Gondola (6.4). The highest percentages of crop sellers were found in Gondola and Barue, where approximately 80% sold at least one crop. This contrasts sharply with Guro where only 65% of families sold any crops.

The situation may however deteriorate slightly during the next twelve months as more than 70% of the maize, cowpea and sorghum producers said that they produced less this year when compared to the previous season

The sale of food crops is another indicator of food security, especially in areas where no large scale commercial buying of food crops takes place and where there is good market access. Generally households sell excess production once their own food requirements have been satisfied. Relative to districts such as Maganja da Costa in Zambezia, the sale of food crops in the province was very high (76% of households sold at least one crop). In terms of cultivation and commercialization patterns of food crops, households in Guro not only produced a smaller variety of different crops, but they also sold less. This may be an indication that this district is relatively less food secure than the others. The effect of the lower production levels on household income is compounded by the lack of other income generating activities.

Normally oil consumption patterns give a good reflection of availability of oil on the local market, dietary preferences and the availability of cash for buying oil. In Manica district 78% of households reported using oil at least once a week to prepare the main meal. This was followed with Sussendenga (65%), Barue (59%), Gondola (44%) and Guro (36%). Given other socio-economic indicators the high incidence of oil use in Manica and Sussendenga is probably a function of higher incomes (as reflected by various socio-economic status indicators). Twenty two percent of households in the province said that they use oil for cooking daily.

The vast majority of households who planted oilseeds at some or other time did so within the past 5 years. Sesame is at present far more important than sunflower. During the 1996/1997 season 8% of households planted sesame and 1% sunflower. These differences are most likely related to the fact that sesame forms part of the local diet and can be marketed locally without the need of outside buyers or the presence of oil presses. Gondola and Sussendenga are the most important sesame producing districts. In the province as a whole 27% reported planting sesame at least once before. This number decreased to 14% during the 1995/1996 season and 8% in 1996/1997. The reasons for never cultivating sesame or stopping are very similar throughout all districts and across all the production years. The most important constraints are Lack of seeds (43%), lack of markets (31%) and lack of labor (10%). In most districts the decision to plant sesame was more or less evenly divided between men (41%) and a joint male/female decision (38%). Sesame seed is usually saved from the previous year or bought from friends or neighbors. Problems encountered during 1995/1996 with the storage of seeds were rats (31%) and insects (21%). Thirty eight percent of households had no problems. The vast majority of households who planted sesame (81%) scattered the seeds and did not use rows. 58% intercrop and most of them use maize and sorghum. The biggest production problems experienced during the 1996/1997 season were Insects (28%), rain (23%) and birds (21%). Forty percent of households who produced sesame at least once, sold some of their crop during the past five years. Half of those who sold, sold it locally and a further 30% sold to traders. The biggest marketing problems encountered were lack of buyers (21%), distance to the market (10%) and problems with price (10%).

Sunflower production takes place at such low levels at present that it was not statistically possible to do a lot of district specific analysis. Of the 80 households (10%) who produced sunflower at least once before, the biggest numbers come from Guro, Barue and Manica. In the case of sunflower the most important reasons for ceasing cultivation or never cultivating are lack of seeds (40%), lack of a market (33%) and lack of labor (7%). During 1995/1996 and 1996/1997 the lack of a market superseded the lack of seeds in importance. Sunflower is more clearly a 'male' crop than sesame. Less than 1% of the growers said the decision to grow

1 INTRODUCTION

The Africare/USAID Manica Oilseed Food Security Initiative is a five year programme which started in October 1996 and will continue until October 2001. The goal of the project is to significantly enhance food security in Manica Province. The programme has two main components

- * The development of a sustainable, small scale oil seed production and processing industry in five districts in Manica Province
- * Increased levels of awareness and application of improved nutrition and health practices

The first objective will be achieved through increasing knowledge about oilseed production, creating a demand for oilseed production, facilitating the marketing of oilseeds, providing credit for the purchasing of oil presses and the training of sales agents and repair technicians in the sale and maintenance of oil presses. The nutrition and health component will focus on nutrition education, community based growth monitoring and training in the prevention and treatment of diarrhoea. All activities related to nutrition and health will be a subcomponent of the oil seed programme in so far as its target population will be the communities selected for the oil seed programme.

The Logical Framework of the Project makes provision for a variety of different indicators and measuring tools for monitoring and evaluating programme impact. A large number of these are based on information from household questionnaire surveys, making it necessary to conduct a baseline survey. Since Africare has not worked in Manica Province before it was decided to do a comprehensive baseline survey which in addition to measuring the baseline values of impact indicators also included information necessary for planning purposes. Two baseline surveys were conducted - one to cover the agricultural component and the other for the nutrition/health component. This report only deals with the findings of the agricultural survey whilst Report 2 describes the nutrition/health situation of the target communities. Both surveys were carried out during June and July 1997.

Africare made use of two consultants for the baseline surveys. Veronica Fletcher developed the survey methodology, designed the questionnaires and planned and coordinated the execution of fieldwork. Research Consultancy Services provided comments during the development of the methodology and questionnaire design, but its main task was to analyze the data and prepare the reports.

2 METHODOLOGY

The 320 800 people (49354 households) targeted by the programme was also the target population of the survey. At the beginning of implementation, Africare consulted widely with communities and Government officials to identify villages that produced oilseeds in the past and showed an interest in oil seed production. Another important factor was accessibility - only those villages that are presently accessible were considered for the survey. Poor access would have acted as a disincentive to traders, making oilseeds unmarketable and demotivating farmers.

The calculation of sample size was based on the incidence of stunting in Guro. Stunting is a good indicator of socio-economic status and food intake. According to MSF (1995) 54% of the children under five in Guro are stunted. Using the formula $n = Z^2 \cdot p(1-p)/d^2$, the minimum sample size was calculated as 384 households¹. In order to compensate for the design effect of cluster sampling the sample size was doubled to n=768. This translated in practice to a random selection of 78 clusters of 10 households each.

Table 1 List of sampled areas

DISTRICT	POST	LOCALITY	SELECTED CLUSTERS
GONDOLA	Inchope	Doeroi	Centro de metuchira, centro de Acomodação, Doeroi
	Amatongas	Pindanganga	Chipindaumwe, Pindanganga-centro
	Macate	Macate	Macate-sede, Mevumbe, Macuenjere, Musangadzi interior
		Marera	Matamira, Zinaia
		Chissassa	Fernandes Nhamatanda Chissassa-sede
		Maconha	Macoropa, Josina Machel, Nharimiro
	Zembe	Zembe-sede/Trangapasso	Revue-Kamba, Chauranga, Ripongue
		Boavista	Nhanda, Nhaulanga
	Cafumpe	Chiongo	Tique-tique
		Pumbuto	Pumbuto-sede
	Mavonde	Chitunga	Mocumbue
	Vanduzi	Vanduzi	Belas I, Almada, Verde, Bairro Centro, 25 de Junho
		Pungue-sul	Chitundo, Nhamatiquiti
	Messica	Messica	2 da Bairro Vila Messica, 5 ta Bairro Vila Messica, Bairro Chimoio, Bairro Mutse
		Bandula	Aldeia Garuzo, Chicamba Real, 3 a Bairro Bandula
SUSSEN-DENGA	Sussendenga	Sussendenga-sede	Nhamezara 25 Junho 1&2, Chicueu Nhamawaia
		Munhinga 2	Chimbua
	Rotanda	Rotanda	Mussambudzi (tsetsera)

¹ $Z=1.96$ (error risk of 5%), $p=0.5$ (prevalence of stunting of 54%), $d=0.05$ (precision of $\pm 5\%$)

		Munhinga I	No clusters selected
		Mussapa	No clusters selected
	Muoha	Muoha	Mavita-sede
	Dombe	Mabara	Moiana chugumete
		Darue	Ndongue Sanguene
		Matarara	Tussene Macocue
	Guro	Guro-sede	1 de Maio B, Nhansana, Tsetsekama B Tsetsekama A, 1 de Maio A, Tongogara A, Samora Machel A, Catoe-local
	Mungari	Mungari	Juliassa Nyerere
		Chivuli	3 de Fevereiro
	Nhamassonge	Nhamassonge	Phumphwa
BARUE	Catandica	Catandica-sede	1 Maio Sahantunzi Sabao
		Chiwala	Honde Chiwala-centro
		Nhazonia	Matundu, Nhangaze
	Nhampassa	Nhampassa	Nhampassa-sede
		Nhassacara	Nhassacara-sede
		Fudzi	Pandiera Camazashenga, Fudzi-sede

The map on the next page shows the distribution of these sampled clusters. During fieldwork, key informants helped to divide each community into sectors of approximately 500 people. Thereafter one of these sectors was randomly selected for the survey. The fieldworkers then used the WHO method of spinning the bottle to determine the starting point of each team. The first household was randomly selected along the direction of the bottle by using the numbers on a currency note. The agricultural team went in the direction where the bottle was pointing, whilst the health team went the other way. Thereafter every second household was selected for interviewing. The agricultural and health surveys were conducted in the same clusters, but in different households. The main reasons for this are both questionnaires are very long and doing both in one household would have been tiring to the interviewees. The health survey also targeted households with children under five years, whilst the agricultural survey looked at households in general. A copy of the agricultural baseline questionnaire is attached in Appendix C.

3 GENERAL SOCIO-ECONOMIC INFORMATION

3.1 Introduction

This project targets five of the nine districts in the province. These are Gondola, Guro, Barue, Manica and Sussendenga. The map on the next page gives an indication of the geographic distribution of the target districts.

Map 1: Manica province and the target districts of the project



Barue is a long, nearly rectangular district, bordering Zimbabwe and straddling the main tarred road to Tete. It generally has good access to transport and marketing opportunities. During the past two years various roads and bridges were rehabilitated in the area (ACNUR/PNUD 1996c). Traders buy and resell agricultural produce in Tete, Chimoro, Zimbabwe and Beira. The sale of charcoal, firewood and chickens are common sources of additional income for smallholders. This district has a lot of links with Zimbabwe because of its proximity to the border and some administrative posts for example Choa, is inaccessible from Mozambique, but has better road access to Zimbabwe. The most important organizations promoting cash crops in the district are TABEX who works with the family sector and promotes tobacco production and TextAfrica that purchases cotton (Messiter 1997).

Just north of Barue is Guro. This district has lower levels of commercial activities and appears to have large tracts of unused land (Messiter 1997). The rainfall is more irregular and lower than in the other parts of Manica and the northern part has great potential for goat production (ACNUR/PNUD 1996b). When short of food, inhabitants go to Barue and Changara (Tete) to buy. Groundnut is an important crop and has potential as an oil crop because of low prices in the area (Messiter 1997).

The southern most district in the province is **Sussendenga** - the so called bread basket of the province. Sussendenga has a variety of agricultural activities including aquaculture (mainly carp and tilapia), has significant numbers of livestock owners, animal traction is not uncommon and in the more mountainous parts farmers use gravity irrigation for wheat production amongst other things (Messiter 1997, ACNUR/PNUD 1996e). 70% of the roads have been rehabilitated (mostly by GTZ) and are in a good condition. Organizations involved in commercial agriculture are Mozambique industrial with a sunflower farm, TABEX (who works on a limited scale with tobacco) and some cotton projects being implemented by Text Africa. NGO's working in the district include GTZ, MHC, World Vision (only field trials) and CVM (Messiter 1997).

Gondola is the place of fruit trees especially bananas. The district is divided in half by the Beira corridor and has relatively good infrastructure. There appears to be some land ownership disputes as there are a large number of commercial agricultural producers. Their presence appear to limit the amount of land available to smallholders. Concern has rehabilitated some roads and bridges in the district. Other NGO's working there include Redd-Barna, GTZ-MARP, ADPP and MCH (Messiter 1997). The main gateway to Zimbabwe is in **Manica** district. Communities along the Beira corridor generally has good access to traders and a variety of commercialization opportunities. Most roads, except those in the mountainous parts are in a reasonable condition. Cotton and Tobacco is grown with support from Tabex and SAGREV respectively. Two groups of Catholic sisters are actively promoting and working with women's groups in the district (Messiter 1997).

3.2 Household demographic profiles

Mean household sizes in the surveyed areas ranged between 6.1 and 7.9, with a mean for the province of 6.5. Less than 3% of household members are away for 6 or more months during the year. Nearly half of the household heads (48%) are returnees who has been in their present village for less than five years. Seventeen percent have been there between 5 and 10 years and 34% for more than 10 years. There were no significant differences between districts except that households in Manica seemed to have been less disrupted by the war as 69% reported being in their present place for more than 5 years (compared to 51% in the district as a whole).

The reported relationships of the household members to the household head reveal that

- * The average household has 3.6 children living most of the time with the household
- * A significant percentage (10%) of household members are other relatives who are not part of the nuclear family. 80% of these are younger than 20 years
- * In Guro, 103 male household heads share 165 wives amongst them. This may indicate a high incidence of polygamous households with more than one wife residing at the same homestead.

Literacy rates amongst people older than 10 years is the poorest in Guro and Barue, where approximately 42% have no education. In the other three districts the percentage of people with no education is nearly 10% lower (between 29 and 34%).

Eleven percent of the interviewed households are female headed. The highest proportion of female headed households was recorded in Manica (15%) and the lowest in Guro (8%). Female household heads have statistically significantly (chi-square p-value=0.0) less years education than their male counterparts. Eighty four percent of the female household heads received no education compared to only a quarter of their male counterparts.

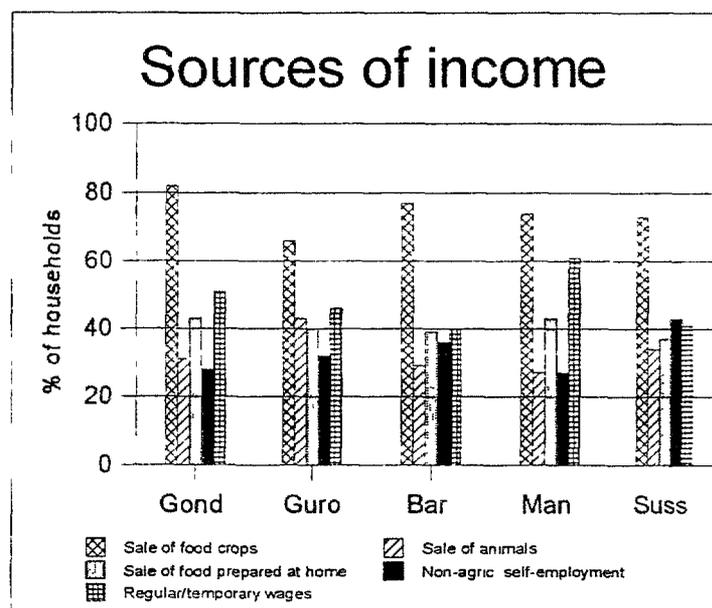
3.3 House construction

The mean number of houses² per household varied from three in Gondola, Manica and Sussendenga to four in Guro and Barue. There were considerable variations between districts when it comes to the material used for the construction of the main house. Generally, 90% of households either used mud and sticks or unbaked clay bricks for the walls of their main house. However, the use of just wood and clay was significantly more prevalent in Gondola (84%) and Barue (72%). In Guro (56%), Manica (39%), and Sussendenga (56%) significantly fewer households use these building materials and more favored the use of unbaked clay bricks. The vast majority of houses (91%) had roofs made of grass, regardless of the material used for wall construction.

3.4 Economic activities

Most households are dependent on agricultural production for survival. Approximately 14% of households reported receiving remittances during the past year. There was very little variation between districts in this respect. Off-farm economic activities of individuals also showed little variation between districts. Approximately 19% engage in economic activities classified as self-employment, whilst 14% are employed by others (either temporarily or permanently). Also see Appendix A for more details. The graph below illustrates the main sources of income of the surveyed households.

Graph 1: Sources of income during the past year



Generally less households in Guro sold crops, but there were significantly more livestock sellers (43%) than in the other areas. In Gondola and Manica, the sale of food crops and regular/temporary wages were the most significant sources of income. Manica had significantly more households (61%) who reported income from wages (temporary or regular) than any of the other districts (mean 49%). Besides the sale of food crops Sussendenga had a balanced spread of

² All structures, including the small shelters on the 'machambas' were included in these house counts

other activities. Non-agricultural self-employment was the second most reported income source in the district and the significantly more people in Sussendenga were involved in these activities than in the other districts.

3.5 Household possessions

Given that it is very difficult to make accurate income measurements, one of the tools that may be used for measuring changes in household income, is a comparison of the monetary value of household possessions over time. The monetary values of household possessions as measured in June/July are summarized in Table 2. See Appendix B for the detailed list of goods and mean prices used.

Table 2: Monetary value of household possessions

Monetary value in Meticals	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussendenga n=140	TOTAL n=780
Total monetary value ³ of possessions						
% Less than 1 000 000	36	35	35	32	22	32
% Between 1 000 001 and 2 000 000	27	20	23	21	20	23
% Between 2 000 001 and 3 000 000	16	11	21	12	22	17
% More than 3 000 001	21	35	21	35	36	28

These values represent the current replacement values of these goods and do not incorporate factors such as the age/state of repair of these items. However, one would assume that the degree of error built in as a result of this weakness will be similar over time. The comparison of subsequent measurements with baseline values then becomes meaningful, if one makes provision for the fact that the age of goods are not considered in the calculation. For example, if the socio-economic situation deteriorates, households are likely to sell some of their possessions to raise money for food and this will be reflected in the total monetary value. What will not be reflected will be the fact that old/worn production implements will not be replaced. If the situation deteriorates, but not sufficiently to necessitate the selling of goods, this will be reflected as no change in household possessions. If there is a 'no change situation', it is more likely that the socio-economic status of households deteriorated rather than remained stable because of the devaluation of goods over time.

The data indicates that

- * The differences between districts are relatively small
- * Guro and Manica have similar profiles. The fact that Guro did not have a visibly poorer profile when compared to all the other districts, despite all other indications that it is a poor district, is related to the fact that high value animals such as goats and pigs, are owned by large numbers of households.

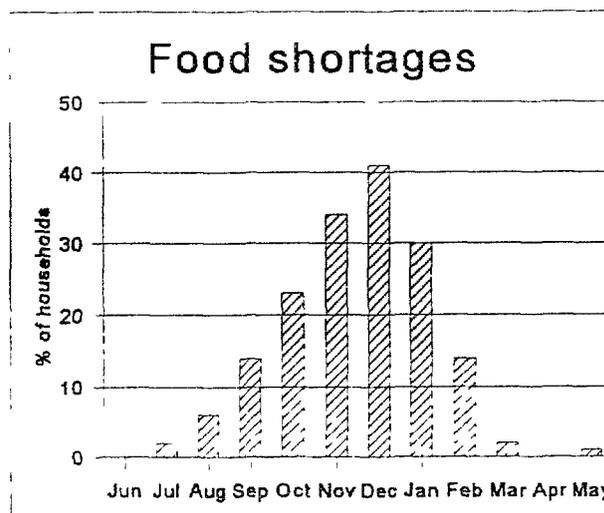
³ Calculations were based on the standard MSU list of households possessions and the mean prices across all districts as measured in August 1997. If the items were available, prices were recorded for district capitals, the rural areas surrounding it and Chimoio. Some items such as sewing machines and motorcycles are only available in Chimoio and those prices were used in the calculations. Appendix A contains a summary of the mean monetary values.

- * Sussendenga has the most evenly distributed possession values, with a greater percentage of households in the 3000000+ category than in the lowest category (less than 1000000 meticais)

3.6 Food shortages

Approximately half of all households suffered food shortages for at least one month of the past year. Generally the differences between districts are not statistically significant. Gondola had the most households (52%) reporting food shortages and Barue the least (43%). The mean number of months when food shortages were experienced did not vary a lot between the districts and is approximately 1.7 months. The highest percentage of households reporting food shortages for any one month is 41% for the month of December. The graph below shows that even during the months with the most serious problems (November, December and January) only between 30 and 40% of households experienced problems. Since most producers of the main staples (maize and sorghum) said that they produced less this year than the previous year it is possible that food shortages in November/December 1997 may be more prevalent.

Graph 2: Percentages of households that experienced problems with food shortages during 1996/1997



3.7 Oil consumption

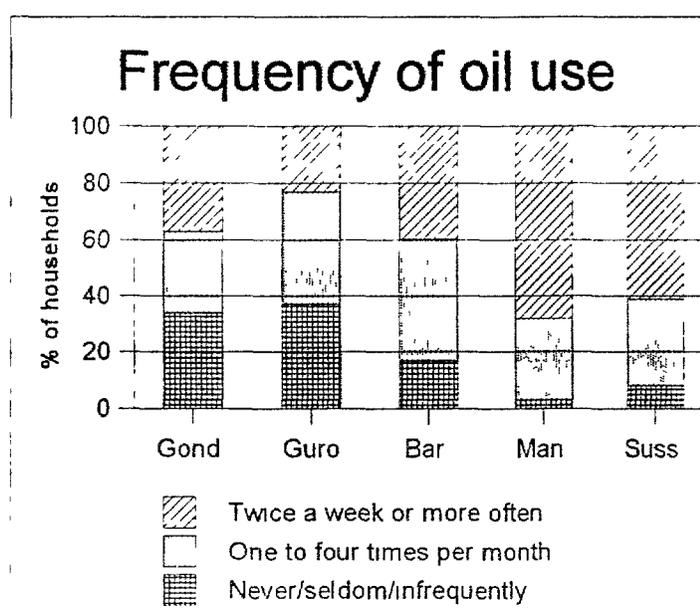
The preceding section showed that there was little variation between districts in terms of food security and food shortages. However, the same is not true for oil consumption patterns⁴. There are significant differences between districts and these may be as much related to socio-economic conditions than to nutrition education about the importance of oil consumption. Variations in the consumption of oil may also be linked to availability and price, although a quick assessment revealed that oil is readily available throughout most of the project area (Messiter 1997). The use of oil in food preparation is significantly lower in Guro and Gondola than in any other of the surveyed districts.

⁴ Oil consumption only measured the consumption of extracted oil and not indirect consumption in the form of coconut, sesame and groundnuts

Slightly more than a third of households in these two districts reported using cooking oil never/seldom/infrequently. In Guro the effect of the lower oil use for food preparation on total dietary intakes may be diminished by the high percentage of households who reported growing groundnut (groundnut is considered a good source of dietary oil)

The use of oil was the highest in Manica and Sussendenga where 68% and 61% of households respectively reported using oil more often than twice a week. This corresponds well with the patterns observed in income sources (high percentage of wage earners in Manica), the use of more permanent building materials for houses (clay bricks) and slightly higher percentages of households in both districts who had household possessions valued at more than 3000000 meticals

Graph 3: Frequency with which oil is used for cooking



More than two thirds of households in Barue, Manica and Sussendenga buy oil between one and four times per month. In Gondola and Guro where the frequency of oil use is also lower, only 52% buy oil that frequently.

TABLE 3: Frequency with which oil is bought

Frequency	DISTRICT					TOTAL n=780
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussendenga n=140	
Never/seldom/infrequently	41	8	16	19	10	12
1-4 times per month	52	52	65	70	77	62
More than once per week	7	40	20	10	11	26

Statistics on the availability of oil in the market place seems to confirm the observations of the Rapid Rural Assessment (Messiter 1997) Three quarters or more of households in most districts normally buy their oil at the markets/shops in their village The only exception is Gondola where 67% bought oil locally and 22% in Chimoiu None of the households surveyed in Gondola Barue and Sussendenga reported using the oil press of a neighbor Four percent of households in Guro (Guro -sede Tsetsekama A & Samora Machel) and one percent of households in Manica (Vanduzi Bairro Centro) reported getting oil from a neighbor/own oil extraction These may refer to traditional methods of oil extraction, but further investigation is needed

4 CROP PRODUCTION

4.1 Profiles of the crop producers

The characteristics of the people who worked regularly⁵ in the family s fields during the past year, can be summarized as follows

- * They represent 43% of the total population
- * Thirty percent were household heads 37% , the wife of the household head and 22% children
- * Slightly more than half (57%) were female, and 43% male
- * The mean age of these workers was 34 years
- * Guro and Barue had the poorest educational profiles Approximately 54% of these workers had no education at all Compared to the approximately 40% with no education in the other three districts, this indicates significantly poorer levels of education amongst the producers
- * Working in the fields was not the only occupation of some individuals Twenty seven percent of them also sold their labor to others as temporary/permanent workers and 36% were engaged in off-farm self-employment

4.2 Use of radio and extension services

In Gondola, Guro and Barue approximately 40% of households have a functioning radio In Manica and Sussendenga the figure is much higher at 57 and 51% respectively The latter two districts also have the highest percentages of households who reported listening to the radio programmes for small producers - in Manica 54% and in Sussendenga 49% listens The lowest level of listening was reported in Guro where only 30% tuned in to these programmes See Table 6 in the Appendix for more details The most important reason given for not listening to these programs was that they do not have a radio or do not have a functioning radio (58%) Other reasons included, not interested (20%) and a lack of batteries (10%)

Presently, extremely few households reported receiving visits from extension officers The highest percentages were recorded in Barue and Sussendenga where 13% of households said that they had a visit from an extension officer

⁵ Regularly refers to household members who always/often worked on the family farm during the past year

In Barue and Manica more than 94% of those who received visits received it from an extension officer of the District Department of Agriculture. In Sussendenga 61% of the visits were from the District Department of Agriculture and a further 22% from CN de Algodão. A further 17% received visits from GTZ. In Gondola 29% of the visits were from the District Department of Agriculture and 75% from Concern.

The only districts where significant numbers of households saw/attended an agricultural demonstration during the past year were Barue, Manica and Sussendenga. In Barue 11%, Manica 7% and Sussendenga 9% benefited from demonstrations.

4.3 General agricultural practices

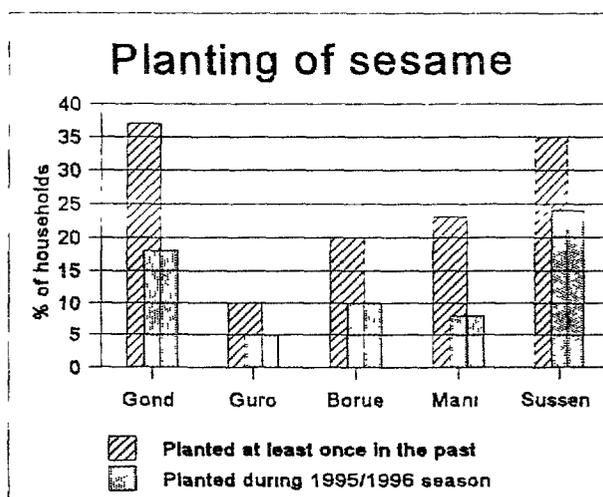
Most households still use traditional agricultural practices. The only districts where more than 5% of households used improved inputs (improved seeds/insecticides/herbicides) were Manica (7%) and Sussendenga (10%). None of these districts had significant numbers of households who reported using chemical fertilizers. Support from commercial agricultural organizations was also limited. Sussendenga was the only district where a significant number of households (5%) said that they received help for the production of cash crops.

4.4 Sesame production

4.4.1 Cultivation patterns

Gondola and Sussendenga are historically the most important sesame producing districts. The graph below shows that the percentages of households who engaged in sesame production was low in all districts. During the 1996/1997 season only 8% of households⁶ in the districts surveyed, reported planting sesame.

Graph 4: Distribution of households who planted sesame in the past and those who planted during the 1995/1996 season



⁶ The number of households who planted during the 1996/1997 season was too low to do meaningful statistical analysis at district level - hence the combined figure. One will have to rely on historic trends to get an idea of the variations between districts.

Seven percent of households planted sesame more than 5 years ago. 5% planted between 2 and 5 years ago, 8% planted for the last time during 1995/1996 and another 8% planted during the 1996/1997 season.

Households who planted in the past but did not plant during the 1996/1997 season had various reasons for stopping with cultivation, but there were no clear patterns/significant differences between districts. The main reasons for stopping with cultivation/never cultivating were:

- * Lack of seeds (43%)
- * Lack of markets (31%)
- * Lack of labor (10%)

The decision to plant sesame was evenly divided in most districts between men (41%) and a joint decision between males and females (38%). Only 20% of the decision makers were women. Guro was the only district where men had statistically significant (55%) more decision making powers than women or a joint decision.

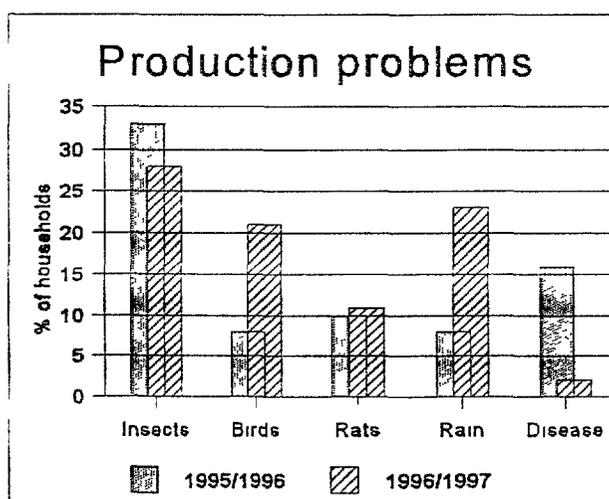
4.4.2 Cultivation practices

Saved seed from the previous year (44%) and bought from neighbors/private sale (44%) were the most important sources of sesame seed during the 1995/1996 season. This year, 82% used seeds that they saved from the previous year. The vast majority (81%) of those who planted sesame at some point in time scattered the sesame seed when planting and did not use rows. 54% of households made sure that no more than 2 plants grow together. Intercropping between sesame and other crops were the most widely used in Guro (73%), Barue (81%) and Manica (77%). The most commonly used crops were maize (46%), sorghum (12%), groundnut (3%) and beans (2%).

4.4.3 Production problems

Insects, birds and rats pose the biggest threat to small holder's sesame crops. During 1996/1997 large amounts of rain also had a negative impact on production. The graph below summarizes the biggest problems experienced during the 1995/1996 and the current season.

Graph 5: The most important sesame production problems



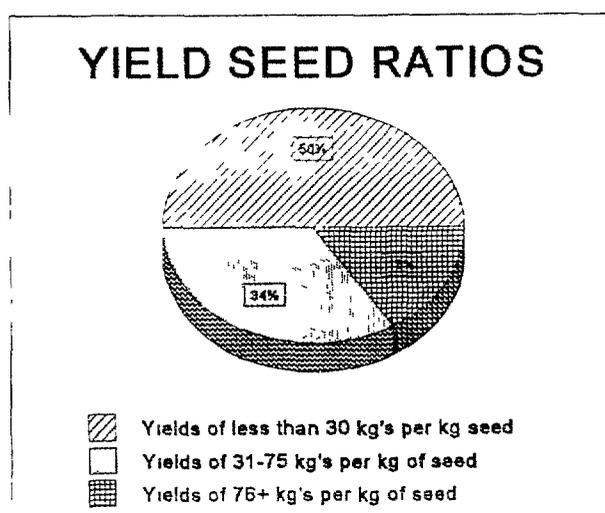
4 4 4 Labor

Only seven percent reported using laborers during the present season. The number of laborers employed varied between 2 and 5.

4 4 5 Yields

Responses were pretty mixed when comparing the present season with the previous season. 44% said that their harvests were better, 35% said that they had less and 15% felt that it was the same. Since it is very difficult to get accurate land size information, it was decided to use seed yield ratios to give an indication of yields. Based on the data supplied by sesame producers for the 1995/1996 season, the seed/yield ratios can be summarized as follows:

Graph 6: Yield seed ratios for the 1995/1996 season



The wide range of yield seed ratios may be an indication that the quality of the information is not as reliable as one hoped that it would be. However, the general trends do indicate low yields for at least half of the population. Sixty five percent of sesame growers said that they lost some of their crop before harvest during the 1995/1996 season.

4 4 6 Uses for sesame

Sesame is principally used for consumption. Ninety nine percent of the 1995/1996 producers said that they consumed some of the seeds.

Other important uses include

- * Seed production 84% of households
- * Sales 53% of households
- * Storage 58% of households
- * Oil production⁷ 6% of households

⁷ Probably using traditional methods of oil extraction

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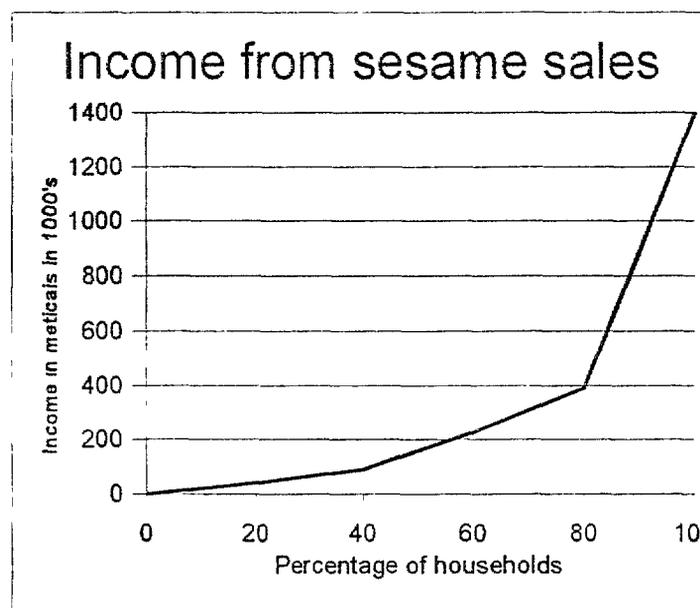
Thirty eight percent of those who stored sesame seed experienced no problems. The remainder had problems with rats (31%), insects (21%), theft (5%) and humidity (4%)

4.4.7 Commercialization

Unlike sunflower seeds, sesame seed has been incorporated into local diets. This created a local market demand which gave sesame an advantage above sunflower in the absence of the large scale commercial buying. Forty percent of those who produced sesame at some or other point in the past, sold part of their crop during the past five years. Half of these sellers sold to neighbors or in private sales, while a further 30% sold to traders. During the 1995/1996 season a slightly greater proportion of households (53%) sold sesame.

Barue had the smallest percentage of households (44%) who reported problems with the commercialization of sesame and in Gondola the most (72%). The problems experienced were very similar across districts. The most important being a lack of buyers (21%), distance to the market (10%) and problems with the price (10%).

Graph 7: Income distribution from sesame sales during 1995/1996 season



The graph shows that the income from sales was very skewed. The percentile distribution below shows that 50% of households earned less than 153,000 meticaals.

25 th percentile	51000 meticaals
50 th percentile	153000 meticaals
75 th percentile	330000 meticaals
Maximum	1400000 meticaals

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4.5 Sunflower production

4.5.1 Cultivation patterns

The habit of cultivating sunflower is not widely established amongst the surveyed households. Insignificant numbers of farmers in Gondola (4%), cultivated sunflower at least once before. In the other four districts between 9 and 15 percent planted it. Cultivation is also not a very old practice - 80% of those who reported planting sunflower said that they did so during the past five years. More details about the geographic distribution of sunflower growers can be found in Appendix A.

TABLE 4: Percentages of households who cultivate sunflower

When cultivated	Percentage of households
Planted at least once before	10
Planted during 1995/1996 season	4
Planted during 1996/1997 season	1

Reasons why people never cultivated or stopped with the cultivation of sunflower did not vary a lot between districts. The main reasons were lack of seed (40%), lack of markets (33%) and lack of labor (7%). Unlike with sesame, nearly no women made the decision to plant sunflower on their own. The decision was either made by a male (53%) or by both males and females (46%).

4.5.2 Cultivation practices

The most important sources of seeds during the 1995/1996 season were seed saved from the previous year (33%), donation from Mozambique industrial (22%) and exchange of seed (19%). Seed for the present season were mainly saved (50%), bought from neighbors (25%), bought at market/shop (13% = 1 household) and a gift (13%).

Fifty percent or more of the sunflower planters in Sussendenga and Manica sow the recommended 2-3 seeds per hole. In Guro and Barue more than 55% of households plant between 4-6 seeds per hole.

Cultivation practices did not vary significantly between districts⁸. Households generally use **plant spacing that is much wider than the recommended spacing**. Only 13% use 60-80 cm intervals between rows and 16% use 25-30 cm intervals between plants. The biggest portion of growers use more than 80cm spaces between rows (42%) and 49% use more than 35 cm between plants. The big spacing between plants may be related to the fact that nearly half (42%) of households plant other crops with sunflower.

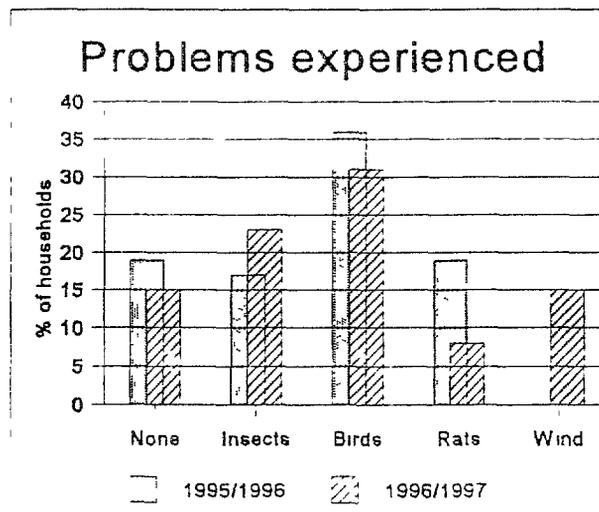
⁸ Gondola had in many instances profiles that were very different. However, given the small numbers of households who planted sunflower in that district one should interpret those statistics with great caution, especially when comparing with the other districts.

Maize (94%) is the most important crop used for intercropping whilst groundnut and sorghum were used by the remainder of households. Sunflower plots are generally further from home than sesame plots. 76% of households had sunflower plots further than 30 minutes away from home as opposed to 32% with sesame plots. 88% of the growers said that their sunflower plots are on fertile land.

4.5.3 Production problems

The nature of the production problems experienced during the 1995/1996 season did not differ significantly from those listed for the present season. However, it does appear as if birds and rats were a bigger problem during 1995/1996 than at present. Insects on the other hand, provided problems during the present season. This phenomenon may be related to the high rainfall figures reported during the present season. The graph below illustrates the relative importance of the various problems.

Graph 8. Problems experienced during the 1995/1996 and 1996/1997 seasons



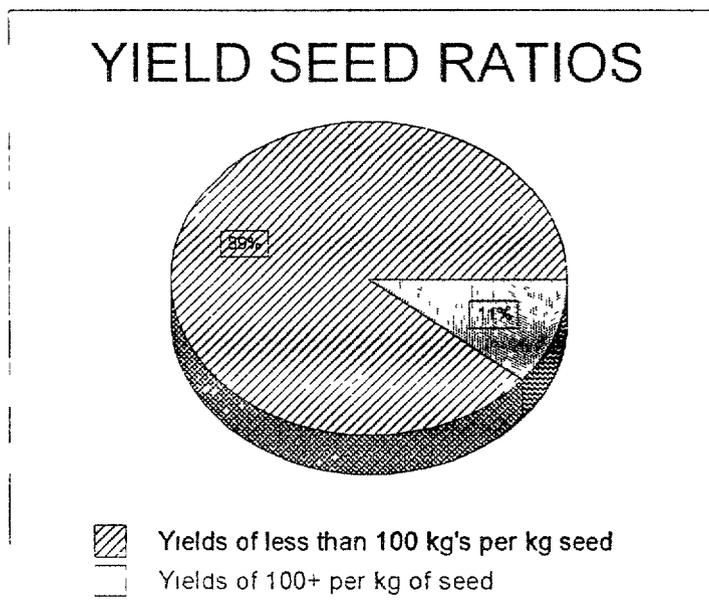
4.4.4 Labor

Three of the eight sunflower growers (1996/1997) employed laborers. Two of these households employed 2-3 workers whilst the other had four or more workers. Less than 1 percent of households in general said that one or more of their members worked on someone else's sunflower/sesame farm during the past two years.

4.5.5 Yields

All the sunflower growers said that they had better yields this year when compared to the previous year. The previous year 74% said that they lost some of their crop before harvest. The graph on the next page shows that yields during the 1995/1996 season were very low - nearly 90% of the sunflower growers reported yields of less than 100 kg s per kg seed. 85% said that they harvested 76kg's or less per kg of seed sown.

Graph 9 Yield seed ratios for the 1995/1996 season



4 5 6 Uses for sunflower

During the 1995/1996 season households reported using their sunflower in the following ways

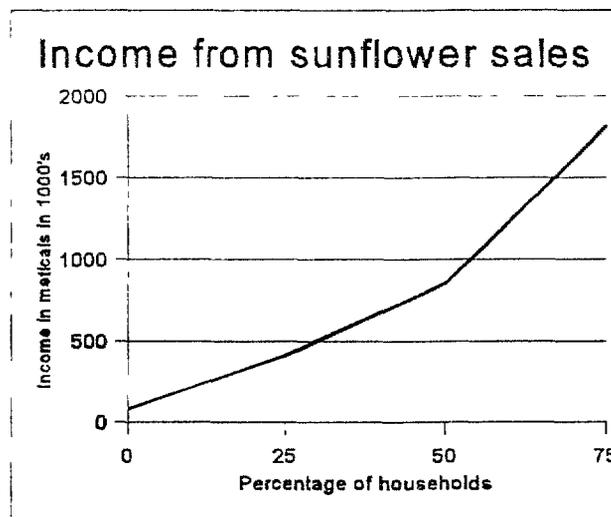
- * 44% sold their crop
- * Nobody produced oil for sale
- * 7% made oil for home consumption
- * 48% said they produced seeds
- * 37% consumed some of their produce
- * 37% stored sunflower

Sixty nine percent of households reported experiencing problems during the storage of sunflower seeds. The biggest problems were rats (38%) and insects (19%).

4 5 7 Commercialization

Forty four percent of the people who have been growing sunflower for some time, sold part of their crop during the past five years. The major portion of the producers sold to Mozambique industrial (23%), traders (37%) and Agricom (29%). During the 1995/1996 season, all of the households who sold sunflower, sold more than 50% of their crop. 75% of the sunflower sellers earned less than 180000 meticais per annum. The graph on the next page shows the distribution of income. The maximum is not included in the graph because one individual reportedly earned 32000000 meticais which makes the division of the y-axis too big to illustrate the distribution of the majority of cases.

Graph 10 Income distribution from sunflower sales during 1995/1996 season



4.6 Groundnut production

4.6.1 General

Groundnuts are produced by more than 40% of households in all districts except Sussendenga. In addition to being a cash crop, it also has potential as a source of oil in areas where prices are very low. For example in Guro, Africare may investigate the possibility of promoting the use of groundnuts with oil presses, given the abundance of groundnuts and the low prices (Messiter 1997). The table below summarizes the most important characteristics of the groundnut producers.

TABLE 5: Groundnut production profile for the 1996/1997 season

	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
% of households who planted groundnut during the past season	43	69	55	48	32	48
% of households who sold groundnut during the past season	10	34	17	18	9	16
% of groundnut producers who experienced crop losses during the past year	46	51	61	57	43	52
Production compared to the previous year						
% More	22	40	34	39	41	33
% Less	67	55	63	51	57	60
% The same	11	5	3	8	0	6

4.6.2 Commercialization

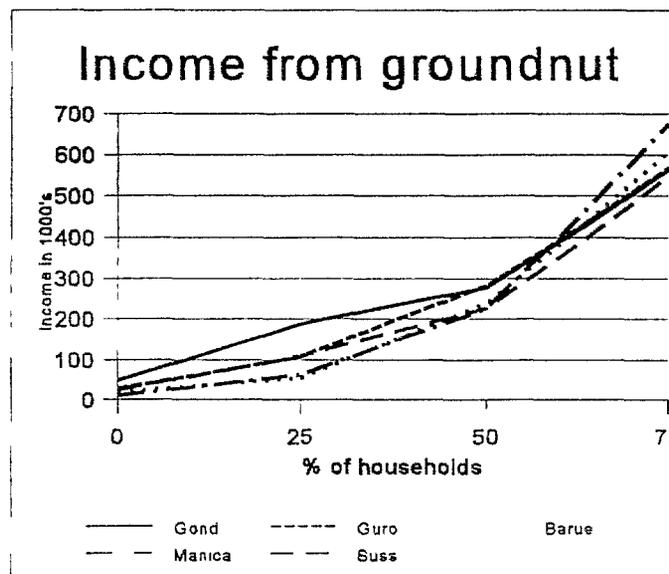
Even though a sizeable proportion of households produced groundnut, the majority of them consumed rather than sold their crop. This may reflect households' consumptive needs or it may be a symptom of commercialization problems such as a lack of buyers. 66% of the groundnut producers did not sell any of their crop. Most of those who sold sold less than 50% of their total yield.

The distribution of kilograms sold was very skewed. As can be seen from the summary below, 75% of households sold less than 126 kg's per household, whilst the household who sold most sold 20 times more than that.

25 th percentile	23 kg's
50 th percentile	45 kg's
75 th percentile	126 kg's
Maximum	2520 kg's

Generally, producers in Sussendenga sold the least per household, whilst Gondola and Guro sold the biggest quantities per producer. This is reflected well in the estimated incomes from groundnut as given in the graph below.

Graph 11: Estimated income in meticais from groundnut sales during 1996/1997 season⁹



More households in Gondola received a slightly higher income from groundnut sales than the other four districts. On the higher end of the scale, households from Guro and Manica (albeit relatively few) gained higher incomes than households in the other districts.

⁹ It is important to note that it is virtually impossible to get accurate information about quantities sold. Mainly because sales take place over a period of time and often in small quantities. These figures therefore only give a rough idea about the incomes earned from groundnut sales. Prices used, represent mean price estimates for August for each district. Both the prices in the district capital and the prices in the outlying areas were taken into consideration.

4.7 Production of tobacco and cotton

Insignificant percentages (less than 2%) of households grew tobacco and cotton during the past year. Generally, Tobacco harvests were reported to be poorer than the previous season - this is most likely related to the high rainfall figures reported during 1996/1997. In contrast to this, cotton harvests were reported to be better than the previous year.

TABLE 6. Production of cotton and tobacco during 1995/1996

PRODUCTION VARIABLES	CROPS	
	Tobacco	Cotton
% of households who planted	2	1
Compared to 1995/1996 production was		
% More	7	67
% Less	79	33
% The same	14	0
% of households who sold	1	1
Estimated quantities sold/bartered in kg	25 th perc 0.6 50 th perc 3.6 75 th perc 200 Maximum 324	Mean 759 (SD 683)

4.8 Principal food crops

4.8.1 General

Maize is the most important crop planted and sold by households in the surveyed districts. 99% said that they plant maize and 59% sold some of their maize crop during the past season. Sorghum is the second most important crop in all districts except Gondola where cassava was slightly more popular (7% more households planted cassava than sorghum).

Crops grown by more than 50% of households in the various districts are:

Gondola: Maize (100%), cassava (76%), sorghum (69%), sweet potato (63%) and bananas (63%)

Guro: Maize (98%), sorghum (80%), millet (75%), groundnut (69%), cowpea (54%), sweet potato (53%)

Barue: Maize (99%), sorghum (85%), sweet potato (70%), groundnut (55%) and cassava (55%)

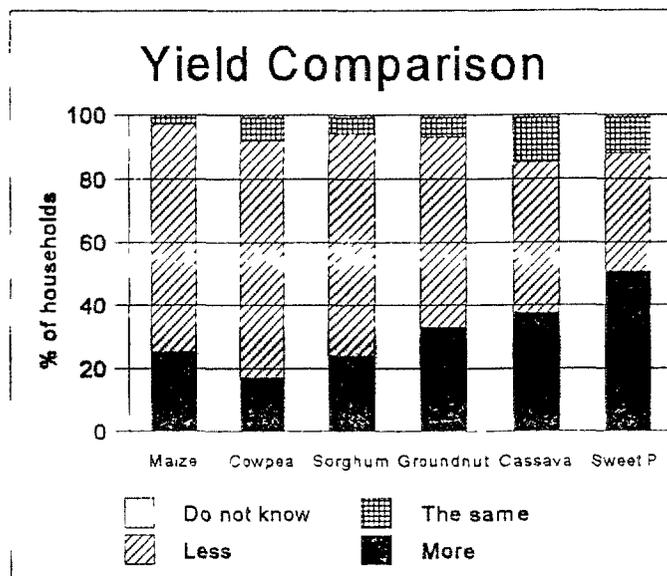
Manica: Maize (99%), sweet potato (69%), sorghum (59%) and cowpea (50%)

Sussendenga: Maize (99%), sorghum (69%), cassava (59%) and sweet potato (56%)

4 8 2 Harvests in comparison with the past year

The graph shows that the vast majority of the producers of the principal food crops felt that they had poorer harvests this year when compared to 1995/1996

Graph 12 Production of the present season as compared to the previous season



The rootcrops such as sweet potato and cassava generally fared better than the other food crops. There were also some variations between districts. Harvests in Guro were generally poorer than elsewhere. Ninety two percent (maize) and 89% (sorghum) said that they harvested less than the previous year. Cowpea harvests were the poorest in Gondola, Guro and Manica - approximately 80% of households in those districts reported poorer harvests.

4 8 3 Commercialization

In general 76% of the households surveyed, sold some of their crops. Gondola and Barue had approximately the same percentage of households (80%) who sold whilst Manica and Sussendenga had similar profiles (73%). Guro is the only district that differed significantly from the others. Not only did only 65% of households reported selling crops, but the mean number of crops sold per household was also significantly lower in Guro (1.5) than in the others. The mean number of crops sold across all districts was 2.2. The highest mean was recorded in Gondola, where the average household sold 2.6 crops.

Crops sold by more than a quarter of households in the various districts were

- Gondola:** Maize, cassava and bananas
- Guro:** Maize and groundnut
- Barue:** Maize and sweet potato
- Manica:** Maize
- Sussendenga:** Maize and bananas

5 LIVESTOCK

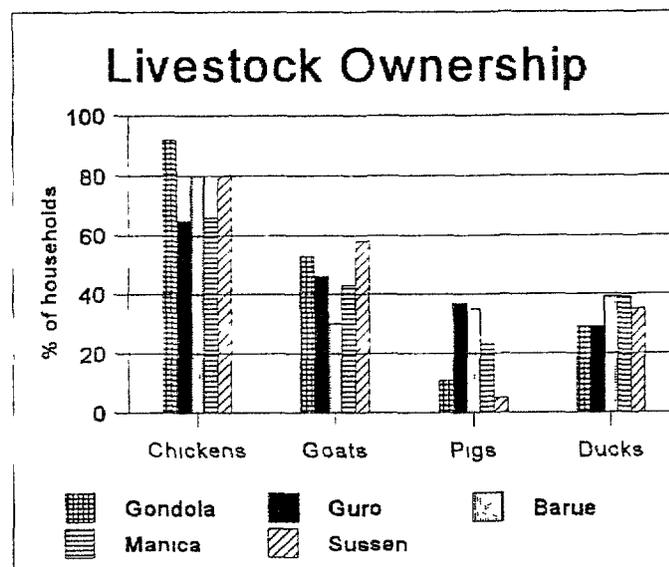
5.1 Characteristics of livestock herders

Approximately 12% of the population was involved in livestock herding activities during the past year. Sixty six percent of them were children of the household head and their mean age was 19 years. In line with the traditional practice of giving males the responsibility for livestock keeping, 65% of these herders were male. Their levels of education were much higher than that of the workers in the family fields, as seventy one percent of them received at least one year of education. Other activities that this group engage in are off-farm self-employment (14%) and sale of labor to others as temporary/permanent workers (10%).

5.2 Livestock ownership patterns

In terms of the types of livestock generally owned there were little variation between districts. The most frequently kept livestock are chickens, pigs, goats and ducks. However, as can be seen from the graph below there were considerable differences between districts when it comes to the percentage of households who reported keeping specific kinds of animals. Gondola, Barue and Sussendenga had the biggest percentages of households keeping chickens, whilst the most significant numbers of pig owners could be found in Guro, Barue and Manica. Besides chickens, goats are the most frequently kept in all districts except Barue. Fifty three percent of the households surveyed kept goats.

Graph 13 Livestock ownership patterns across districts



When considering the livestock ownership distribution patterns the mean is not an appropriate tool because of the big standard variation. Percentiles gives one a better idea of the number of livestock owned by the average family. The line graph below shows the distribution of the different kinds of livestock for the district as a whole.

- Seventy five percent of the
- * Chicken owners own 20 or less chickens
- * Pig owners own 6 pigs or less



- * Goat owners own 8 goats or less
- * Duck owners own 6 ducks or less

5.3 Livestock feeding practices

Livestock feeding patterns are of interest to the project as some of the waste products of oil pressing may be used as livestock feed. More than 96% of the owners of chickens, pigs and ducks normally give their animals agricultural products or bought food to eat. Goats were the only animals where the vast majority of households rely on natural grazing.

6 IMPACT INDICATORS

Various impact indicators had to be measured during the baseline survey. These are summarized in the table below. In some cases problems were encountered with the original indicators and alternatives were suggested.

TABLE 7: Indicators related to the oil seed component that had to be measured through the household questionnaire survey

INDICATOR	PROBLEM	SUGGESTED ALTERNATIVE/ COMMENT	BASE-LINE VALUE
OILS COMPONENT¹⁰			
Goal level: 1) Cash income from oil seed production increases ? % per participating household	Income distribution too skewed to use mean as the measure of central tendency	% of households who earned an income from the sale of oilseed (1995/1996) (1996/1997)	9% 7%
Purpose level: 5) Oil seed production (ha's) planted within target districts increases ? %	The reliability of data on the area planted is even more questionable than data on quantities planted/harvested	Sampled value '96/'97 Sesame 7.32 ha Sunflower 34.66 ha	463.14 2192.94
Output level: 9) Kg's of oil seed harvested per year in the target districts	-	Sampled value '95/'96 Sesame 5257 Sunflower 22543 Sampled value '96/'97 ¹¹ Sesame 3290 Sunflower 1504	332.610 1426.296 208.158 95.158

¹⁰ Indicators 5, 9, 11. All extrapolations are based on a 320800 target population estimate for 1996. Given the mean household size of 6.5 in the district, the estimated number of households targeted were 49354 households. Because of the lack of accurate information, extrapolations during mid-term and final surveys will have to use the same population estimate. This estimate will have to be increased each year to make provision for normal population growth rates. Sample data was multiplied by a factor of 63.27 to arrive at population estimates.

¹¹ This is incomplete/estimates as harvesting was not finished when the survey was done.

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INDICATOR	PROBLEM	SUGGESTED ALTERNATIVE	BASELINE VALUE
10) % Farmers planting oil seed per hectare in the target districts	Extrapolations not very reliable because of lack of accurate population statistics	% of households who planted oil seeds	9%
11) % Kg's of planting seed planted in the target districts	-	Sampled values 1995/1996 Sesame 153 Sunflower 903 1996/1997 Sesame 106 Sunflower 29	9680 57133 6707 1835
NUTRITION COMPONENT			
10) % of families within the target districts that consume oil at least once per week during the 6 months after the oil seed harvest	-	-	56%
ADDITIONAL INDICATORS			
a) Average number of hectares planted with sesame/sunflower per oilseed producer this year	Distribution too skewed to use means for central tendency	1996/1997 % of households who planted one or more hectare with sesame % of households who planted one or more hectare with sunflower	33% 50%
b) Average kg's of sunflower/sesame seed harvested per oil seed producer last year/this year	Distribution too skewed to use means for central tendency	1995/1996 % of sesame producers who harvested more than 50 kg's of sesame % of sunflower producers who harvested more than 100 kg's sunflower	38% 25%

Various problems have been identified with the original indicators and alternatives were suggested. The most appropriate indicators need to be selected and target values need to be set for each indicator. There is also uncertainty whether the timing of the baseline survey was late enough to get complete information about the present season. At the same time the 1995/1996 data may be less accurate because of recall problems. Thus a decision has to be made about the appropriateness of using data from either year.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 Socio economic conditions and economic activities

The main goal of the project is to improve food security through increased household income from oil seed production. Unfortunately it is virtually impossible to measure household income accurately through direct measurement. An estimate of household income using proxy indicators will be made by MSU, based on key indicators measured during the survey. This data will be ready by the end of December. It may however be useful for Africare to use an assessment of the



present monetary value of household possessions as an additional indicator of changes in household income

The distribution of the monetary value of household possessions is parabolic with a third of households having possessions valued at less than 1000000 meticals, 23% between 1000000 and 2000000, 17% between 2000000 and 3000000 and 28% with more than 3000000

Differences between most districts were not significant, but households in Sussendenga had a more evenly distribution of household goods and significantly more households in the 2000000 and more category. The use of unbaked clay bricks (a possible indicator of higher socio-economic status) was significantly more prevalent in Manica. In Guro and Sussendenga relatively high percentages of households reported using this building method. Expenditures on luxury items such as new clothes and meat, normally also reflect household income. Significantly more families in Manica and Sussendenga spent money on new clothes and meat during the past year, whilst a relatively high percentage of households in Barue spent money on meat. Given the fact that the crop production profiles (in terms of varieties produced and crops sold) of Manica and Sussendenga are average and both districts reported an above average variety of different off-farm income generating activities, one may assume that these differences in expenditure patterns are also related to income from wage labor and other economic activities.

Crop production and the sale of food crops is the main source of income for most households. 76% reported earning money from crop sales during the past year. In addition to farm related economic activities, 19% of individuals were involved in off-farm self-employment and 14% were employed by others (permanent or temporary). The latter is indeed the second most important source of income - 49% of households reported some income from this source. Significantly more families in Manica district said that they get an income from temporary/permanent employment. The preparation and sale of food from home was the third most important activity (41%), followed by the sale of animals (32%) and non-agricultural self-employment (32%).

7.2 Food security

The oil component of the programme aims to improve food security by raising household income. Food shortages was not a serious problem during the past year - half of the households reported some shortages, but the mean duration of these was only 1.7 months. Most households had problems during November and December. In terms of the duration of shortages and the percentage of households affected, there were no significant differences between districts. This relatively good profile is probably a function of the high agricultural production potential of the province and the above average yields of the 1995/1996 season. The situation is expected to deteriorate slightly during the next twelve months - more than 70% of the maize, cowpea and sorghum producers said that they produced less this year.

The sale of food crops is another good indicator of food security, especially in areas with relatively good market access. Generally households sell excess production once their own food requirements have been satisfied. Relative to districts such as Maganja da Costa in Zambezia, the sale of food crops in the province was very high (76% of households sold at least one crop). Households in Guro appears to be the worst of all the target districts. Families in this district not only produced a smaller variety of different crops, but they also sold less. Only 65% sold crops as opposed to 81% in Gondola and 80% in Barue. The effect of the relatively low food production is compounded by the lack of other income generating activities besides the sale of livestock.

7.3 Oil seed consumption

Since locally pressed oil is not available (less than 1% said that they sometimes buy from the oil press of a neighbor), oil consumption patterns give a good reflection of availability of oil on the local markets dietary preferences and perhaps more than all availability of cash to buy oil with. Since 76% of households reported buying oil at their local market shop one may safely assume that cash rather than the availability of oil are the most important factors that influence consumption patterns. The intake of oil was the highest in Manica and Sussendenga - the two districts where other indicators of socio-economic status such as expenditure patterns and reported sources of income were also better than in other districts. In Manica 78% of households reported using oil to prepare the main meal at least once per week. The second highest consumption patterns were reported in Sussendenga where 65% of households reported consumption of once a week or more often. Gondola and Guro had the lowest oil consumption with 44% and 36% reporting preparing the main meal at least once a week with oil. It is important to note that these use of oil for cooking does not necessarily total dietary oil intake. For example in Guro, exceptionally large percentages of households planted groundnuts - this may signify higher groundnut (and oil) consumption than what is reflected in food preparation statistics.

7.4 Oil seed production

The planting of both sesame and groundnut in the province does not appear to have a long history nor are significant percentages of households involved in it. The majority of households who planted oilseeds at some or other time, did so within the past 5 years. Sesame is presently far more important than sunflower. During the 1996/1997 season 8% planted sesame and 1% sunflower. These differences are most likely related to the fact that sesame forms part of the local diet and can be marketed locally without the need for outside buyers or the presence of oil presses.

Gondola and Sussendenga produce the most sesame. Sesame was produced in the past by at least 37% of households in Gondola and 35% of households in Sussendenga. In the province as a whole 27% reported planting sesame at least once. This number decreased to 14% during the 1995/1996 season and 8% in 1996/1997. The reasons for never cultivating sesame or stopping with sesame cultivation are very similar throughout all districts and across all the production years. The most important constraints are Lack of seeds (43%), lack of markets (31%) and lack of labor (10%). In most districts the decision to plant sesame was more or less evenly divided between men only (41%) and a joint male/female decision (38%). Guro was the only district where more than half of the decision makers was in one category. There 55% of the decision makers were male, suggesting significantly less women in the district are involved or consulted when production decisions about sesame is made.

Sesame seed is mainly saved from the previous year and bought from friends or neighbors. The fact that seed availability is a problem is again reflected in sources of seed used during 1995/1996 and 1996/1997. During last year, seed saved from the previous year was used by 44% of households and 44% used bought seed. But this year, 82% used bought seeds probably indicating that there was less seed available on the market - thus households who did not save seeds did not produce this year. Problems encountered during 1995/1996 with the storage of seeds were rats (31%) and insects (21%). Thirty eight percent of households had no problems. The vast majority of households who planted sesame (81%) scattered the seeds and did not use rows. 58% intercrop and most of them use maize and sorghum. The biggest production problems during the 1996/1997 season were Insects (28%), rain (23%) and birds (21%).

Forty percent of households who produced sesame in the past sold some of their crop during the past five years. Half of the sellers found a local market and a further 30% sold to traders. The biggest marketing problems were lack of buyers (21%), distance to the market (10%) and problems with price (10%).

Sunflower production takes place at such low levels at present that it was not statistically possible to do a lot of district specific analysis. Of the 80 households (10%) who produced sunflower at least once before, the biggest numbers come from Guro, Barue and Manica. In the case of sunflower the most important reasons for stopping cultivation or never cultivating are lack of seeds (40%), lack of a market (33%) and lack of labor (7%). During 1995/1996 and 1996/1997 the lack of a market was consistently mentioned by more households (approximately 48% versus 30%) than the lack of seeds.

Sunflower is more clearly a 'male' crop than sesame. Less than 1% of the growers said the decision to grow sunflower was taken by women. In 53% of the households males took the decision and 46% of the cases both males and females participated. Those who planted sunflower before, mainly sold to traders (37%), Agricom (29%) and Mozambique industrial (23%). Their biggest problems were a lack of buyers (26%), distance to the market (11%), problems with price (11%) and the cost of transport (10%).

Cultivation techniques are probably closely related to intercropping practices. 42% intercropped and this may be the reason why the intervals between rows and plants were consistently higher than the recommended distances. Even though 43% of households said they plant more than 3 seeds per hole, most (82%) still left the recommended 1-2 plants per hole after thinning the crops. In the case of sunflower the biggest problems experienced during the 1996/1997 season were birds (31%), insects (23%) and wind (15%).

Considering the socio-economic conditions in the various districts, the food security situation and production of other crops, the project is likely to have the biggest impact on food security if work is concentrated in Gondola, Guro and Barue. The main reasons for this are

- * These districts have little alternative sources of income and poorer socio-economic conditions than Manica and Sussendenga
- * Guro and Barue appear to have low levels of crop production and commercialization at present
- * Considering the relatively lower rainfall levels in certain parts of Guro and its limiting effect on the range of crop alternatives, sunflower may be the best way of promoting the growth and development of this particular district

7.5 Other cash crops

Three cash crops have potential in the province, namely groundnut, tobacco and cotton. Groundnut is of particular interest because it also has potential as an oilseed in situations where there is excess production and low prices. Of the three, only groundnut is presently produced by significant numbers of producers. Forty eight percent of households reported planting groundnut during the past season. The highest proportion of producers was found in Guro (69%) and the lowest in Sussendenga (32%). Relatively few households reported selling groundnut (66% of the producers) and harvests were reported to be less than the previous year by 60% of the producers. Less than 2% of the households were involved in cotton and/or tobacco production. Cotton production was reported to be higher than the previous year by 67% of the producers whilst 79% of the tobacco growers said that they harvested less. The latter is probably related to higher than average rainfall in the beginning of 1997.

7.6 Production of other food crops

Individuals who spent most time working in the fields were nearly equally divided amongst the sexes (57% female) and 44% had no education. Most farmers still use traditional farming methods. Less than 5% of households used improved inputs such as improved seeds, fertilizers and other chemicals. Nearly half of the households have radios and listen to programmes for small producers on the radio. Very few households received any visits from agricultural extension staff or saw agricultural demonstrations during the past year. The only significant percentages were recorded in Barue and Sussendenga where 13% of households reported receiving a visit during the past twelve months. Some activity was also recorded in Manica, but in Gondola and Guro virtually no extension support was recorded.

The food crops produced by most households were maize (99%), sorghum (71%), sweet potato (65%) and cassava (55%). The mean number of crops planted per household was 5.8% with the lowest variety recorded in Guro (5.0) and the highest in Gondola (6.4). The highest percentages of crop sellers were found in Gondola and Barue where approximately 80% of households sold at least one crop. This contrasts sharply with Guro where only 65% said that they sold any crops. Maize was the only crop sold by 50% or more of households. In Gondola bananas was an important commercial crop (46%), groundnut in Guro (34%), sweet potato in Barue (25%) and Manica (31%).

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APPENDIX A

DETAILED TABLES

TABLE 1 General population characteristics

	DISTRICT					
	Gondola n=1533	Guro n=869	Barue n=855	Manica n=938	Sussend n=850	TOTAL n=5043
Mean number of household members (SD)	6.1 (2.8)	7.9	6.6	6.3	6.1	6.5
Relationship to household head						
% head	16	13	15	16	17	16
% wife of head	15	19	19	16	17	17
% child	53	59	55	57	53	55
% father/mother	2	1	1	1	1	1
% other relative	12	7	8	9	11	10
% other	1	0	1	0	1	1
% not specified	1	1	0	0	0	0
% of household members at home for 6 months or less per the year	2	3	2	2	1	2
Gender						
% Male	51	48	50	49	51	50
% Female	49	52	50	51	49	50
Off-farm economic activities						
% self-employed	17	16	19	21	22	19
% employed by others (temporary/permanent)	16	13	14	16	12	14
% of people older than 10 years with no education	34	43	42	29	31	35
	n=245	n=111	n=130	n=149	n=142	n=777
Time the household head has been in village ¹						
% 5 years and less	56	46	55	32	48	48
% 6-10 years	10	23	11	29	19	7
% More than 10 years	34	31	34	40	33	34

¹ This question was associated with the matrix with information on individual household members (n=5043). During analysis the cases which had 'relationship to household head' completed as head of household were selected for analysis. There were very small differences in the numbers included in the selection and the actual number of households interviewed e.g. in Gondola 245 households instead of 250.

TABLE 2 Household structures

	DISTRICT					
	Gondola n=250	Guro n=110	Birue n=130	Manica n=150	Sussend n=140	TOTAL n=780
Mean number of houses per household (SD)	3(1.6)	4(1.9)	4(2.1)	3(1.5)	3(1.8)	3(1.8)
Root of main house						
% Grass/other natural material	94	97	97	82	83	91
% Corrugated iron	4	3	3	10	12	6
% Tiles	1	0	0	8	4	2
% Other	1	0	0	0	1	1
Construction material of main house						
% Wood and clay	84	56	72	39	56	65
% Unbaked clay bricks	8	39	25	47	37	28
% Cement or baked clay bricks	3	1	2	14	7	5
% Grass	3	2	0	0	0	1
% Reeds	2	2	1	0	0	1
% Others	1	0	0	0	0	0
Material that the door of the main house is made of						
% Wood	41	25	42	79	63	50
% Sticks	2	4	1	0	0	1
% Reeds	41	71	54	13	31	40
% Other	16	0	3	8	6	9

TABLE 3: Income sources and selected expenditures

	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen- denga n=140	TOTAL n=780
Sources of income						
% Sale of food crops	82	66	77	74	73	76
% Sale of sunflower/sesame	11	4	4	6	16	9
% Sale of other cash crops	2	0	2	1	6	2
% Sale of home produced oil	1	0	0	0	1	0
% Sale of animals	31	43	29	27	34	32
% Food prepared at home	43	40	39	43	37	41
% Non- agric Self-employment	28	32	36	27	43	32
% Buying and selling of clothes etc	10	18	15	16	19	15
% Sale of natural resources	12	16	12	21	6	13
% Sale of donated goods	0	0	0	0	0	0
% Regular or temporary wages	51	46	40	61	41	49
% Pensions/other social security	3	4	2	9	6	5
% Other	0	0	0	2	1	1
A family member worked on someone else's farm this year						
% Sunflower	1	0	0	0	0	0
% Sesame farm	0	0	0	1	0	0
A family member worked on someone else's farm last year						
% Sunflower	2	0	1	0	0	1
% Sesame farm	0	0	2	1	0	1
% of households who spent money on new clothes during the past year	18	18	16	33	33	23
% of households who spent money on meat during the past year	50	61	78	85	79	68

TABLE 4. Ownership of production implements and household goods

	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen- denga n=140	TOTAL n=780
Ownership of production implements						
% with hoes	100	100	100	99	99	100
% with pangas	95	60	77	83	99	85
% with axe	81	86	95	82	93	86
% with spade	18	14	25	31	25	22
% with rakes	12	13	11	17	16	14
% with sickles	50	56	65	51	60	55
% with files	32	25	18	24	29	27
% with plough	0	3	1	15	10	5
% with cart	1	4	1	13	7	5
Ownership of other household goods						
% Sewing machines	8	8	6	5	11	8
% Wooden tables	21	26	25	44	35	29
% Wooden beds	14	14	13	33	29	20
% Bicycles	20	38	32	31	36	30
% Motorcycles	1	0	0	1	1	1
% Radios	43	43	41	59	51	47
% Mattresses	9	14	7	23	26	15
% Watch	40	44	44	53	44	44
% Aluminum pots	47	52	51	61	54	52

TABLE 5 Food shortages and oil consumption

Food shortages and Oil consumption	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
% of household who experienced food shortages during the past year	52	45	43	49	46	48
Mean number of months with food shortages	1.7(1.9)	1.7(2.3)	1.5(2.1)	1.8(2.2)	1.7(2.1)	1.7(2.1)
Months with food shortages						
% January	32	23	29	32	31	30
% February	12	11	15	22	13	14
% March	2	3	2	5	0	2
% April	0	0	0	1	0	0
% May	1	1	0	1	0	1
% June	1	4	0	1	0	0
% July	2	3	0	3	1	2
% August	6	7	5	7	6	6
% September	12	17	13	11	17	14
% October	20	30	21	23	28	23
% November	35	34	34	31	36	34
% December	46	36	36	41	42	41
Frequency with which main meal is prepared with oil						
% Never	4	9	0	0	0	3
% Every day	18	8	18	29	33	22
% Twice to six times per week	19	15	22	39	28	24
% Once per week	7	13	19	10	4	10
% Various times per month	22	27	25	19	27	24
% Sometimes	22	11	12	2	4	12
% Feasts	6	11	5	1	4	5
% After harvest	2	6	0	0	0	1
Frequency with which oil is bought						
% Never	5	10	0	0	0	3
% Every day	2	1	1	3	1	2
% Twice to six times per week	5	7	15	16	9	10
% Once per week	24	17	23	39	33	27
% Various times per month	28	35	42	31	44	35
% Sometimes	28	13	14	9	7	16
% Feasts	6	11	5	1	4	5
% After harvest	2	6	1	0	0	2

TABLE 5(continued): Food shortages and oil consumption

Food shortages and Oil consumption	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
Place where oil is normally bought						
% Private seller	2	0	1	1	3	1
% Market /shop in village	67	78	82	91	71	76
% Other village	4	1	0	0	2	2
% District center	5	17	12	0	11	7
% Chimoio	22	5	5	9	9	12
% Own produce	0	2	0	0	0	0
% Donated	0	1	0	0	1	0
% Zimbabwe	0	0	1	0	1	0
% Beira	0	0	0	0	1	0
How often does your family use the sunflower/sesame oil press of a neighbor						
% Never	100	96	100	99	100	99
% Sometimes	0	4	0	1	0	1
% Only once	0	1	0	0	0	0

TABLE 6: Profiles of household members who always/often worked on the family farm during the past year

CHARACTERISTICS	DISTRICT					
	Gondola n=1533	Guro n=869	Barue n=853	Manica n=938	Sussendenga n=850	TOTAL n=5043
% of total population involved	47	42	43	39	39	43
Number of people who always/often worked on the family farm	n=718	n=361	n=363	n=366	n=335	n=2143
Relationship to household head						
% head	31	27	32	31	31	30
% wife of head	30	43	42	38	39	37
% child	24	22	20	21	19	22
% father/mother	3	1	1	2	2	2
% other relative	11	6	4	8	8	8
% other	2	0	1	0	1	1
% No response	1	1	0	0	0	0
Gender						
% Male	48	38	42	41	42	43
% female	52	62	58	59	58	57
Mean age (SD)	34(17)	33(15)	36(17)	34(15)	35(15)	34(16)
% with no education	40	53	55	39	40	44
% 1-5 years education	53	42	38	46	50	48
% 5+ years education	7	5	7	15	10	8
% engaged in other income generating activities (off-farm self-employment)	32	31	37	42	42	36
% who sold their labor to others as temporary/permanent workers	27	27	28	32	21	27

TABLE 7: The use of radio and extension services

VARIABLE	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussendenga n=140	TOTAL n=780
% with a functioning radio	40	39	39	57	51	45
% who listens to programmes for small producers	40	30	35	54	49	42
	n=151	n=77	n=85	n=69	n=72	n=454
Reasons why people do not listen						
% Do not have radio/not functioning	47	60	58	62	72	58
% Do not know where to go						
% Not interested	26	18	21	15	14	20
% Do not have time	9	9	5	7	3	7
% Lack of batteries	11	3	13	13	10	10
% Did not know existed	2	3	0	1	0	1
% Cannot receive programmes	1	5	1	0	0	1
	0	3	1	0	0	1
	n=250	n=110	n=130	n=150	n=140	n=780
% of households who received visit from extension staff	3	1	13	7	13	7
	n=7	n=1	n=17	n=11	n=18	n=54
Origin of those who visited ²						
% DDA	29	100	94	100	61	76
% Concern	57	0	0	0	0	0
% GTZ	0	0	6	0	17	7
% Unicef	0	0	0	0	0	0
% Redd Barna	0	0	0	0	0	0
% Africare	0	0	0	0	0	0
% CN de algodão	0	0	0	0	22	7
% Tabacos de Manica	0	0	6	0	0	2
% Outro (esp)	14	0	0	0	0	2
	n=250	n=110	n=130	n=111	n=18	n=54
% of households who saw an agricultural demonstration by an extension agent during the past year	1	0	11	7	9	5

² Respondents may have received a visit from more than one respondent

TABLE 8: General agricultural practices

PRACTICES	DISTRICT					
	Gondola n=250	Guo n=110	Barue n=130	Manica n=150	Sussen- denga n=140	TOTAL n=780
Mean number of plots cultivated during the past season	2.4(1.3)	3.1(2.2)	2.4(1.4)	2.0(1.1)	2.2(1.0)	2.4(1.4)
% who used chemical fertilizer during the past season	0	1	0	1	4	1
% who used other inputs (improved seeds, insecticides, herbicides etc)	4	0	2	7	10	5
% who received support from an organization for the production of cash crops during the past season	0	0	1	0	5	1

TABLE 9: Production of sesame in the past

VARIABLE	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen- denga n=140	TOTAL n=780
Number of years cultivated						
% Never cultivated it	63	90	80	77	65	73
% 1-5 years	23	9	14	15	26	18
% 6-10 years	4	0	1	4	3	3
% 10 + years	10	1	5	4	6	6
Last time when cultivated						
% Never	63	90	80	77	65	73
% More than 10 years	5	1	5	4	3	4
% Between 5 and 10 years ago	4	5	2	3	2	3
% Between 2-5 years ago	7	0	4	6	4	5
% Last year	10	4	4	5	12	8
% This year	10	1	6	5	14	8
	n=224	n=108	n=122	n=143	n=121	n=718
Reasons for not cultivating or stopping cultivation ³						
% Lack of seeds	41	50	44	47	36	43
% Lack of land	5	2	5	12	5	6
% Lack of labor	11	1	8	11	15	10
% Lack of markets	28	31	38	25	37	31
% Storage problems	1	0	1	1	3	1
% War	1	1	1	1	1	1
% Lack of money	1	0	0	0	0	2
% Lack of incentives	1	1	3	1	1	1
% Too much rain	1	0	0	1	0	0
% Lack of time/interest	3	1	0	1	1	1
% Do not know the crop	3	9	0	2	0	3
% Family problems	1	0	0	0	0	0
% Soil poor/unsuitable	1	1	0	0	0	0
% Problems with insects	0	1	0	0	0	0
% Problems with birds	0	0	0	0	0	0
Number of households who planted sesame before	n=90	n=11	n=26	n=34	n=49	n=210
Who decided to plant the crop						
% Men	42	55	35	35	45	41
% Women	18	18	23	27	18	20
% Both	38	27	42	38	37	38
Number of seeds per hole						
% Scattered seed	84	27	85	88	82	81
% Less than 2-3	2	0	0	0	0	1
% 2-3 seeds	2	0	8	3	0	1
% 4-6 seeds	2	0	8	3	14	6
% Do not know	7	73	0	6	4	9

³ Where percentages do not add to 100% the remainder is represented by missing data or may be the result of rounding off the numbers. Each family could give two responses to this question. Percentages represent the percentage of total responses and not percentage of households.

Number of plants left per hole						
% 1-2 plants	56	64	65	47	49	54
% More than 2 plants	3	36	4	9	14	10
% Do not know	36	0	27	44	35	34
% Leave as sown	3	0	4	0	2	2
Intervals between rows						
% Less than 60 cm	3	0	4	3	2	3
% 60-80 cm	2	0	8	3	4	4
% More than 80cm	5	18	12	3	8	6
% Do not know	50	46	54	68	61	56
% Do not use rows	38	36	23	24	25	31
Intervals between plants						
% Less than 25 cm	30	9	12	3	10	18
% 25-35 cm	19	9	23	12	10	16
% More than 35cm	12	46	12	12	22	15
% Do not know	39	36	54	74	57	51
% of households who intercrop	42	73	81	77	57	58
% who sold sesame during the past 5 years	41	36	31	32	47	40
To whom the major part was sold						
% Trader	31	0	25	27	38	30
% Agricom	0	50	0	0	0	2
% Neighbors/private	49	25	38	64	54	50
% DDA	0	0	13	0	0	1
% No response	21	25	25	9	8	16
Problems encountered during the sale of produce						
% None	28	33	56	50	44	41
% Lack of buyers	19	33	11	19	21	21
% Market is far	12	0	0	1	8	10
% Poor quality product	3	0	0	0	3	2
% Problem with storage until sale	5	0	0	0	0	3
% Lack of produce	0	0	0	0	0	0
% Problems with the price	7	17	11	1	15	10
% Cost of transport	12	17	0	13	10	5
% No response	14	0	22	1	0	10

TABLE 10: Production of sesame in the 1995/1996 season

	DISTRICT					
	Gondola n=90	Guro n=11	Barue n=26	Manica n=34	Sussen- denga n=49	TOTAL n=210
% of households who planted in 1995/1996	50	46	50	35	67	51
Those who planted before but did not plant 1995/1996	n=45	n=6	n=13	n=22	n=16	n=102
Reasons for not cultivating during 1995/1996						
% Lack of seeds	44	55	19	48	32	40
% Lack of land	1	0	5	3	4	3
% Lack of labor	13	0	24	21	20	16
% Lack of a market	30	46	38	27	32	32
% Problems with storage	1	0	5	0	0	1
% Lack of money	3	0	0	0	0	1
% Too much rain	3	0	5	0	4	3
% Lack of time/interest	4	0	0	0	4	3
% Family problems	1	0	0	0	0	1
% Poor soil/unsuitable	0	0	1	0	4	1
Those who planted 1995/1996	n=45	n=5	n=13	n=12	n=33	n=108
Origin of most seeds during the 1995/1996 season were	-	-	-	-	-	
% Saved from the previous year						44
% Exchanged						1
% Bought from neighbor/private						44
% Bought from market/shop						4
% Gift from a friend/ neighbor/ family						5
% Loan						1
% Bought in Zimbabwe						1

The biggest problems experienced during the 1995/1996 season were:	-	-	-	-	-	
% None						15
% Illnesses						16
% Insects						33
% Birds						8
% Theft						1
% Rats						10
% Wind						1
% Rain						8
% Sun						2
% Planted too late						1
% Poor germination						1
% Baboons						1
% Birds						2
% Late harvest						1
% Pigs						1
Problems experienced during storage of seed	-	-	-	-	-	
% None						38
% Insects						21
% Rats						31
% Humidity						4
% Theft						5
Uses for sesame	-	-	-	-	-	
% of households who sold						53
% of households who produced oil for selling						0
% of households who produced oil for home consumption						6
% of households who produced seeds						84
% of households who lost						65
% of households who consumed						99
% of households who stored some of their produce						58

TABLE 11: Production of sunflower in the past

	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussenda n=140	TOTAL n=780
Number of years cultivated						
% Never cultivated it	96	86	85	86	91	90
% 1-5 years	4	11	11	10	7	8
% 6-10 years	0	1	0	1	1	1
% 10 + years	0	2	4	3	1	1
Last time when cultivated						
% Never	96	86	85	86	91	90
% More than 10 years	2	2	3	4	1	2
% Between 5 and 10 years ago	0	4	3	3	1	2
% Between 2-5 years ago	1	6	4	2	1	2
% Last year	1	2	5	3	5	2
% This year	0	2	1	2	1	3
	n=239	n=94	n=110	n=129	n=128	n=700
Reasons for never cultivating or stopping cultivation ⁴						
% Lack of seeds	37	48	43	41	37	40
% Lack of land	5	1	1	9	3	4
% Lack of labor	8	2	4	8	12	7
% Lack of markets	27	37	43	26	37	33
% Storage problems	2	0	1	3	3	2
% War	0	1	0	0	0	1
% Lack of money	1	0	0	0	0	0
% Lack of incentives	4	1	3	4	1	3
% Too much rain	1	0	0	0	0	0
% Lack of time/interest	2	1	0	1	1	1
% Do not know the crop	6	9	4	8	5	6
% Family problems	1	0	0	0	0	1
% Soil poor/unsuitable	0	1	0	0	0	0
% Problems with birds	0	0	0	0	0	0
Number of households who planted sunflower before	n=11	n=16	n=20	n=21	n=12	n=80
Who decided to plant the crop						
% Men	50	44	65	48	58	53
% Women	0	0	5	0	0	1
% Both	50	56	30	52	42	46

⁴ Where percentages do not add to 100% the remainder is represented by missing data or may be the result of rounding off the numbers. Each family could give two responses to this question. Percentages represent the percentage of total responses and not percentage of households.

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Number of seeds per hole						
% Scattered seed	30	0	0	0	8	5
% Less than 2-3	10	0	0	10	0	4
% 2-3 seeds	30	38	45	67	50	48
% 4-6 seeds	30	62	55	24	42	43
Number of plants left per hole						
% 1-2 plants	80	75	75	90	92	82
% More than 2 plants	10	25	25	10	0	15
% Do not know	10	0	0	0	8	3
Intervals between rows						
% Less than 60 cm	10	6	15	19	25	15
% 60-80 cm	20	6	10	24	0	13
% More than 80cm	10	50	50	38	42	42
% Do not know	20	10	20	10	25	18
% Do not use rows	40	19	5	5	8	13
Intervals between plants						
% Less than 25 cm	40	6	15	19	8	17
% 25-35 cm	10	25	15	19	8	16
% More than 35cm	30	56	50	52	50	49
% Do not know	20	13	20	10	33	18
% of households who intercrop	20	69	45	48	8	42
% who sold sunflower during the past 5 years	46	38	40	38	67	44
To whom the major part was sold						
Mozambique industrial	20	0	13	38	38	23
Trader	80	33	13	25	50	37
Agricom	0	33	50	38	13	29
Girassol Manica	0	17	0	0	0	3
Neighbors/private	0	17	13	0	0	6
No response	0	0	13	0	0	3
Problems encountered during the sale of produce ⁵						
% None	33	17	33	29	43	29
% Lack of buyers	22	39	27	14	21	26
% Market is far	22	6	7	14	7	11
% Poor quality product	0	11	7	0	7	6
% Problem with storage until sale	22	0	7	7	0	6
% Lack of produce	0	0	0	0	0	0
% Problems with the price	0	11	13	14	14	11
% Cost of transport	0	17	0	21	7	10

⁵ Missing values and rounding off accounts for totals lower than 100%

TABLE 12: Production of sunflower in the 1995/1996 season

	TOTAL n=80
% of households who planted in 1995/1996	35
Number of households who planted before but did not plant 1995/1996	n=52
Reasons for not cultivating during 1995/1995.	
% Lack of seeds	36
% Lack of land	3
% Lack of labor	11
% Lack of a market	47
% Problems with storage	1
% Lack of incentives	1
% Lack of time/interest	1
Those who planted 1995/1996	n=28
Origin of most seeds during the 1995/1996 season were	
% Saved from the previous year	33
% Donation from Mozambique industrial	22
% Exchanged	7
% Bought from neighbor/private	19
% Bought from market/shop	4
% Gift from a friend/ neighbor/ family	4
% Bought from local administration	4
% Bought in Zimbabwe	4
The biggest problems experienced during the 1995/1996 season were	
% None	19
% Illnesses	5
% Insects	17
% Birds	36
% Theft	0
% Rats	19
% Ram	2
% Javalis	2

Problems experienced during storage of seeds	
% None	31
% Insects	19
% Rats	38
% Humidity	6
% Theft	3
% Birds	3
Uses for sunflower	
% of households who sold	44
% of households who produced oil for selling	0
% of households who produced oil for home consumption	7
% of households who produced seeds	48
% of households who lost	74
% of households who consumed	37
% of households who stored some of their produce	37

TABLE 13 Production of sesame and sunflower in the 1996/1997 season

	SESAME n=210	SUNFLOWER n=80
% of households who planted in this year	29	10
Number of households who planted before but did not plant this year	n=149	n=72
Reasons for not cultivating this year		
% Lack of seeds	30	30
% Lack of land	4	3
% Lack of labor	20	11
% Lack of a market	32	48
% Problems with storage	2	2
% Too much rain	5	1
% Lack of time/interested	3	1
% Family problems	1	2
% Problems with insects	1	1
Those who planted this year	n=61	n=8
Origin of most seeds during the past season were		
% Saved from the previous year	82	50
% Exchanged	2	0
% Bought from neighbor/private	5	25
% Bought from market/shop	8	13
% Gift from a friend/ neighbor/ family	3	13
% who employed laborers	7	38
Number of laborers employed		
% none	93	63
% 2-3	4	25
% 4+	4	13

The biggest problems experienced during the past season were		
% None	13	15
% Insects	28	23
% Rats	11	8
% Birds	21	31
% Illnesses	12	8
% Wind	1	15
% Rain	23	0
% Sun	2	0
% Late planting	8	0
% Monkeys	2	0
% Pigs	8	0
In comparison with the previous year the harvest was		
% Better	44	100
% Smaller	35	0
% The same	15	0
% Do not know	6	0

TABLE 14: Details on the land planted with sesame and sunflower during the past season

	SESAME	SUNFLOWER
Distance to plots.		
% 0-30 minutes	67	25
% 30-60 minutes	24	63
% More than one hour	8	13
Mean plot sizes in ha (SD)		
% of households who planted	0.57(0.67)	0.125(0.35)
Less than 1 hectare	53	88
Between 1 and 2 hectares	36	12
More than 2 hectares	10	0
Quality of the land		
% Fertile	69	88
% Normal	24	0
% Infertile	7	12

TABLE 15: Geographic distribution of sunflower and sesame growers

	SESAME	SUNFLOWER
GONDOLA	Centro de metuchira, centro de acomodação Doeroi, Pindanga-centro, Macata sede, Mevumbe, Macuenjere, Musangadzi interior, Nhamatanda, Josina Machel, Nharimiro, Revue- Khamba, Ripongue, Nhaulanga, Pumbuto- sede	Mevumbe
MANICA	Mucumbue, Almada, Verde, Bairro centro, Bairro Mutse, 3Bairro Bandula	Mocumbue, Bairro Centro, 3º Bairro Bandula
SUSSENDENGA	Chimbua, Mavita-sede, Moiana, Chigumete, Ndongue, Sanguene, Tussene, Macocue	Sanguene
GURO	I de Maio B, Juliasse Nyerere, Phumphwa	Juliasse Nyerere, Phumphwa
BARUE	Chiwala-centro, Nhampassa-sede, Fudzí- sede	Fudzí-sede

TABLE 16: General crop production

	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen- n=140	TOTAL n=780
% of households who planted crops	100	100	100	99	99	100
Mean number of crops planted per household	6.4 (2.8)	5.0(2.1)	5.9(2.9)	5.3(2.7)	5.5(2.7)	5.8(2.7)
% of households who planted						
% Maize	100	98	99	99	99	99
% Cowpea	47	54	42	50	43	47
% Butter bean	31	7	16	19	20	21
% Sorghum	69	80	85	59	69	71
% Groundnut	43	69	55	48	32	48
% Rice	16	6	26	19	21	18
% Cassava	76	16	55	45	59	55
% Millet	5	75	32	11	2	20
% Cotton	1	0	1	0	5	1
% Tobacco	2	2	2	1	3	2
% Bananas	63	6	21	2	34	36
% Citrus	16	0	2	1	7	7
% Tomato	29	23	35	24	35	29
% Onions	16	8	15	15	22	16
% Garlic	16	4	12	8	14	12
% Inhame	44	2	19	35	30	30
% Sweet potato	69	53	70	69	56	65
% of households who sold crops	81	65	80	74	73	76
Mean number of crops sold per household	2.6(2.1)	1.5(1.7)	2.1(2.0)	2.3(2.1)	1.9(1.8)	2.2(2.0)

% of surveyed households who sold						
% Maize	62	49	67	60	51	59
% Cowpea	14	10	14	16	11	13
% Butter bean	9	2	4	7	7	6
% Sorghum	9	9	18	13	13	12
% Groundnut	10	34	17	18	9	16
% Rice	2	0	5	2	5	3
% Cassava	26	4	9	14	12	15
% Millet	0	4	6	0	0	2
% Cotton	0	0	1	0	5	1
% Tobacco	1	0	2	1	2	1
% Bananas	46	4	12	18	17	24
% Citrus	12	0	0	0	3	4
% Tomato	14	11	19	13	18	15
% Onions	6	6	2	7	4	5
% Garlic	6	2	6	5	3	5
% Inhame	22	0	8	20	12	14
% Sweet potato	19	21	25	31	19	23

TABLE 17: Maize production

	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
% of households who planted	100	98	99	99	99	99
Number of households who planted	n=250	n=108	n=129	n=148	n=138	n=773
Number of times produced during the year						
% once	99	100	100	100	100	100
% more than once	1	0	0	0	0	0
In comparison with the previous year, production was						
% More	29	8	33	24	28	25
% Less	67	92	63	74	68	71
% The same	4	0	4	2	4	3
% Do not know	0	0	1	0	0	0
Uses for produce						
Sales						
% who sold nothing	38	50	32	39	49	41
% who sold between 1-25%	29	26	30	23	28	28
% who sold between 26-50%	24	21	31	32	21	26
% who sold between 51-75%	8	2	7	5	2	6
% who sold between 76-100%	1	1	0	1	0	1
Consumption						
% who consumed nothing	0	0	0	0	0	0
% who consumed 1-25%	19	9	13	14	10	14
% who consumed 26-50%	42	43	53	56	41	47
% who consumed 51-75%	24	33	25	20	28	25
% who consumed 76-100%	15	15	9	11	21	14
Storage						
% who stored nothing	5	6	2	4	1	4
% who stored between 1-25%	79	76	77	78	80	78
% who stored between 26-50%	12	19	20	16	17	16
% who stored between 51-75%	4	0	2	2	1	2
% who stored between 76-100%	0	0	0	0	1	0
Losses						
% who lost nothing	38	40	41	39	41	40
% who lost between 1-25%	55	50	57	57	55	55
% who lost between 26-50%	6	10	2	3	4	5
% who lost between 51-75%	1	0	0	1	0	0
% who lost between 76-100%	1	0	0	1	0	0
Quantities sold/bartered (kg)						
25 th percentile	15	15	15	11	11	15
50 th percentile	30	30	38	23	30	30
75 th percentile	83	60	90	53	45	62
Maximum	270	210	450	540	180	540

TABLE 18: Cowpea production

	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
% of households who planted	47	54	42	50	43	47
Number of households who planted	n=117	n=59	n=55	n=75	n=60	n=366
Number of times produced during the year						
% once	99	100	100	100	100	100
% more than once	1	0	0	0	0	0
In comparison with the previous year, production was						
% More	15	15	20	11	27	17
% Less	76	81	69	81	65	75
% The same	9	3	7	8	8	7
% Do not know	1	0	4	0	0	1
Uses for produce						
Sales						
% who sold nothing	68	81	67	68	75	71
% who sold between 1-25%	11	2	9	16	17	11
% who sold between 26-50%	15	14	18	12	9	14
% who sold between 51-75%	4	2	6	3	0	3
% who sold between 76-100%	2	2	0	1	0	1
Consumption						
% who consumed nothing	1	0	0	0	0	0
% who consumed 1-25%	13	7	11	7	4	9
% who consumed 26-50%	27	33	42	35	27	32
% who consumed 51-75%	20	28	28	35	35	28
% who consumed 76-100%	39	32	19	23	35	31
Storage						
% who stored nothing	11	19	9	8	12	11
% who stored between 1-25%	80	70	66	71	68	72
% who stored between 26-50%	8	12	18	21	19	15
% who stored between 51-75%	2	0	7	0	2	2
% who stored between 76-100%	0	0	0	0	0	0
Losses						
% who lost nothing	46	51	49	43	47	46
% who lost between 1-25%	45	41	46	55	53	48
% who lost between 26-50%	7	9	4	3	2	5
% who lost between 51-75%	0	0	2	0	0	0
% who lost between 76-100%	3	0	0	0	0	1
Quantities sold/bartered (kg)						
25 th percentile	15	15	15	11	11	15
50 th percentile	30	30	38	23	30	30
75 th percentile	83	60	90	53	45	62
Maximum	270	210	450	540	180	540

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TABLE 19: Sorghum production

	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
% of households who planted	69	80	85	59	69	71
Number of households who planted	n=172	n=88	n=111	n=89	n=96	n=556
Number of times produced during the year						
% once	100	100	100	100	100	100
In comparison with the previous year, production was						
% More	28	8	23	25	32	24
% Less	62	89	71	69	66	70
% The same	7	1	5	6	2	5
% Do not know	2	2	0	1	0	1
Uses for produce						
Sales						
% who sold nothing	87	89	79	78	81	83
% who sold between 1-25%	8	6	12	8	10	9
% who sold between 26-50%	4	5	6	10	6	6
% who sold between 51-75%	1	1	3	2	2	2
% who sold between 76-100%	1	0	0	2	0	1
Consumption						
% who consumed nothing	1	0	1	1	1	1
% who consumed 1-25%	9	4	5	9	3	6
% who consumed 26-50%	19	39	40	42	32	32
% who consumed 51-75%	38	31	37	24	40	35
% who consumed 76-100%	34	27	18	25	24	26
Storage						
% who stored nothing	12	9	6	1	7	8
% who stored between 1-25%	71	66	66	68	71	69
% who stored between 26-50%	13	24	20	27	21	20
% who stored between 51-75%	4	1	7	3	1	4
% who stored between 76-100%	0	0	0	0	0	0
Losses						
% who lost nothing	46	39	39	37	41	41
% who lost between 1-25%	46	51	55	58	54	52
% who lost between 26-50%	5	10	5	5	4	6
% who lost between 51-75%	2	0	1	0	1	1
% who lost between 76-100%	1	0	0	0	0	0
Quantities sold/bartered (kg)						
25 th percentile	54	54	108	45	108	54
50 th percentile	90	162	180	108	180	162
75 th percentile	270	270	324	243	324	270
Maximum	2214	450	648	972	2700	2700

TABLE 20: Groundnut production

	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
% of households who planted	43	69	55	48	32	48
Number of households who planted	n=108	n=76	n=71	n=72	n=44	n=371
Number of times produced during the year						
% once	99	100	100	100	100	100
% more than once	1	0	0	0	0	0
In comparison with the previous year, production was						
% More	22	40	34	39	41	33
% Less	67	55	63	51	57	60
% The same	11	5	3	8	0	6
% Do not know	1	0	0	1	2	1
Uses for produce						
Sales						
% who sold nothing	76	51	69	63	71	66
% who sold between 1-25%	8	13	7	14	16	11
% who sold between 26-50%	6	19	16	18	9	13
% who sold between 51-75%	9	16	7	6	5	9
% who sold between 76-100%	1	1	1	0	0	1
Consumption						
% who consumed nothing	1	1	0	1	0	1
% who consumed 1-25%	15	23	13	11	5	15
% who consumed 26-50%	28	30	44	46	26	35
% who consumed 51-75%	24	29	28	27	52	30
% who consumed 76-100%	32	16	15	14	17	20
Storage						
% who stored nothing	22	12	11	4	6	12
% who stored between 1-25%	63	76	61	72	80	69
% who stored between 26-50%	16	10	24	24	16	18
% who stored between 51-75%	0	1	4	0	0	1
% who stored between 76-100%	0	1	0	0	0	0
Losses						
% who lost nothing	54	49	39	43	57	48
% who lost between 1-25%	33	48	55	49	39	44
% who lost between 26-50%	50	3	4	7	2	6
% who lost between 51-75%	3	0	0	1	2	1
% who lost between 76-100%	0	0	1	0	0	0
Quantities sold/bartered (kg)						
25 th percentile	30	30	20	12	14	23
50 th percentile	44	56	44	45	45	45
75 th percentile	113	158	168	135	70	126
Maximum	2520	1350	420	70	126	2520

TABLE 21: Cassava production

	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
% of households who planted	76	16	55	45	59	55
Number of households who planted	n=191	n=18	n=71	n=68	n=82	n=430
Number of times produced during the year						
% once	99	100	100	100	100	100
% more than once	1	0	0	0	0	1
In comparison with the previous year, production was.						
% More	32	22	45	32	52	38
% Less	54	78	37	56	31	48
% The same	13	0	18	12	16	14
% Do not know	1	0	0	0	1	1
Uses for produce						
Sales						
% who sold nothing	66	78	85	69	79	73
% who sold between 1-25%	4	0	4	8	13	6
% who sold between 26-50%	14	17	4	9	5	10
% who sold between 51-75%	12	6	6	9	1	8
% who sold between 76-100%	4	0	1	6	1	3
Consumption						
% who consumed nothing	2	0	0	0	0	1
% who consumed 1-25%	18	0	10	26	5	16
% who consumed 26-50%	30	56	23	33	27	30
% who consumed 51-75%	28	33	39	19	34	29
% who consumed 76-100%	23	11	28	21	34	25
Storage						
% who stored nothing	88	78	89	91	89	88
% who stored between 1-25%	9	11	11	6	7	9
% who stored between 26-50%	2	11	0	3	4	3
% who stored between 51-75%	1	0	0	0	0	0
% who stored between 76-100%	0	0	0	0	0	0
Losses						
% who lost nothing	57	61	54	51	60	56
% who lost between 1-25%	34	28	35	43	38	36
% who lost between 26-50%	8	11	11	6	2	7
% who lost between 51-75%	1	0	0	0	0	0
% who lost between 76-100%	1	0	0	0	0	0
Quantities sold/bartered (kg)						
25 th percentile	116	83	77	66	66	66
50 th percentile	198	132	165	116	99	165
75 th percentile	330	181	528	396	132	330
Maximum	2750	198	550	1320	990	2750

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TABLE 22: Sweet potato production

	DISTRICT					
	Gondola n=250	Guio n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
% of households who planted	69	53	70	69	56	65
Number of households who planted	n=174	n=58	n=91	n=103	n=78	n=504
Number of times produced during the year						
% once	97	100	100	100	100	99
% more than once	3	0	0	0	0	1
In comparison with the previous year, production was						
% More	47	38	54	52	64	51
% Less	40	47	40	35	27	38
% The same	12	16	7	13	9	11
% Do not know	2	0	0	0	0	1
Uses for produce						
Sales						
% who sold nothing	72	60	64	54	54	67
% who sold between 1-25%	7	9	7	11	11	14
% who sold between 26-50%	9	16	19	17	17	10
% who sold between 51-75%	9	14	10	10	10	6
% who sold between 76-100%	3	2	0	9	9	3
Consumption						
% who consumed nothing	0	0	0	1	2	1
% who consumed 1-25%	17	11	11	25	4	16
% who consumed 26-50%	23	34	37	39	33	32
% who consumed 51-75%	24	40	26	17	29	25
% who consumed 76-100%	36	14	26	17	31	27
Storage						
% who stored nothing	90	93	93	89	94	91
% who stored between 1-25%	8	7	6	9	4	7
% who stored between 26-50%	2	0	1	2	3	2
% who stored between 51-75%	1	0	0	0	0	0
% who stored between 76-100%	0	0	0	0	0	0
Losses						
% who lost nothing	56	60	53	50	65	56
% who lost between 1-25%	36	35	44	44	32	38
% who lost between 26-50%	6	5	3	6	3	5
% who lost between 51-75%	1	0	0	1	0	0
% who lost between 76-100%	1	0	0	0	0	0
Quantities sold/bartered (kg)						
25 th percentile	46	46	81	35	35	46
Median	115	69	115	104	104	104
75 th percentile	276	207	173	173	207	207
Maximum	2760	690	1265	1518	690	2760

TABLE 23: Tobacco production

	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen- denga n=140	TOTAL n=780
% of households who planted	2	2	2	1	3	2
Number of households who planted	n=5	n=2	n=2	n=1	n=3	n=13
Number of times produced during the year % once	-	-	-	-	-	100
In comparison with the previous year, production was						
% More	-	-	-	-	-	7
% Less	-	-	-	-	-	79
% The same	-	-	-	-	-	14
% Do not know	-	-	-	-	-	0
Quantities sold/bartered (kg)						
25 th percentile	-	-	-	-	-	0 6
50 th percentile	-	-	-	-	-	3 6
75 th percentile	-	-	-	-	-	200
Maximum	-	-	-	-	-	324

TABLE 24: Cotton production

	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen- denga n=140	TOTAL n=780
% of households who planted	1	0	1	0	5	1
Number of households who planted	n=2	n=0	n=1	n=0	n=7	n=10
Number of times produced during the year % once	-	-	-	-	-	100
In comparison with the previous year, production was						
% More	-	-	-	-	-	67
% Less	-	-	-	-	-	33
% The same	-	-	-	-	-	0
% Do not know	-	-	-	-	-	0
Mean Quantities sold/bartered in kg (SD)	-	-	-	-	-	759(683)

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TABLE 25: Profiles of household members who looked after livestock during the past year

	DISTRICT					
	Gondola n=1533	Guro n=869	Barue n=853	Manica n=938	Sussendenga n=850	TOTAL n=5043
% of population involved	13	8	9	15	15	12
Number of people who looked after livestock	n=195	n=73	n=73	n=141	n=131	n=586
Relationship to household head						
% head	10	8	12	13	10	11
% wife of head	14	4	18	8	14	12
% child	65	71	66	68	61	66
% father/mother	0	0	0	0	1	0
% other relative	9	15	4	9	15	10
% other	1	1	0	2	0	1
% not specified	1	0	0	0	0	0
Gender						
% Male	60	82	60	66	62	64
% Female	41	18	40	34	38	36
Mean age (SD)	19(14)	16(11)	20(14)	18(11)	19(15)	19(13)
% with no education	25	34	33	19	36	29
% 1-5 years education	72	65	59	69	57	65
% 5+ years education	3	1	8	12	7	6
% engaged in other income generating activities (off-farm self-employment)	14	7	14	18	15	14
% who sold their labor to others as temporary/permanent workers	16	8	11	6	5	10

TABLE 26: Livestock ownership patterns

LIVESTOCK OWNERSHIP	DISTRICT					
	Gondola n=250	Guro n=110	Barue n=130	Manica n=150	Sussen n=140	TOTAL n=780
% of households with chickens	92	65	80	66	80	79
Number of chickens per household						
25 th percentile	8	5	3.5	5	9	6
Median	15	10	10	9	15	12
75 th percentile	28	20	15.5	13	25	20
Maximum	200	110	50	1000	70	1000
Feeding practices⁶						
% agricultural product/bought food	97	100	95	95	95	96
% natural pastures	2	0	5	5	5	3
% of households with pigs	11	37	35	23	5	20
Number of pigs per household						
25 th percentile	2.5	2	2	2	4	2
Median	4.5	4	2	3	5	3
75 th percentile	6	6	6	5	8	6
Maximum	26	14	24	27	10	27
Feeding practices						
% agricultural product/bought food	96	100	100	100	100	99
% natural pastures	4	0	0	0	0	1
% of households with rabbits	0	0	1	2	0	0
% of households with goats	53	46	30	43	58	53
Number of goats per household						
25 th percentile	2	4	3	2	3	2
Median	4	6	4	4	5	5
75 th percentile	7.5	10	10	7	10	8
Maximum	28	42	20	26	58	58
Feeding practices						
% agricultural product/bought food	3	0	0	3	0	2
% natural pastures	92	100	100	97	100	97
% of households with oxen	1	0	1	15	12	6
% of households with donkeys	0	0	0	0	0	0
% of households with ducks	29	29	31	31	35	31
Number of ducks per household						
25 th percentile	2.5	3	2	2	2	2
Median	4.5	5	4	4	4	4
75 th percentile	6	12	8.5	7	7	7
Maximum	15	28	18	120	35	120
Feeding practices						
% agricultural product/bought food	96	97	100	100	98	98
% natural pastures	1	3	0	0	0	1

⁶ Percentages for feeding practices that do not add to 100% had some missing values - hence the outstanding percentages

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APPENDIX B

**PRICES USED FOR THE CALCULATION OF MONETARY VALUES OF
HOUSEHOLD POSSESSIONS**

Instruments/goods/animals	Places for which prices were available 1997	Mean price used in calculation
Enxadas	Gondola C, Manica C, Manica S, Sussendenga C, Barue S, Barue C, Chimoio	22 214
Catanas	Manica C, Manica S, Barue C, Chimoio	13 600
Machados	Manica S, Sussendenga C, Barue C, Chimoio	18 625
Pas	Manica S, Sussendenga C, Chimoio	99 667
Ancinhos	Sussendenga C, Chimoio	75 000
Foices	Manica S, Sussendenga C, Barue C, Chimoio	20 125
Lumas	Manica S, Sussendenga C, Barue S, Chimoio	14 000
Charruas de tracção animal	Sussendenga C (Zimbabwe)	400 000
Carroça/barra	Manica S, Sussendenga C (Zimbabwe), Barue S, Chimoio	1 162 500
Maquinas de costura	Sussendenga C, Chimoio	1 637 500
Mesas de madeira	Gondola C, Manica C, Manica S, Sussendenga C, Barue S, Chimoio	403 000
Bicicletas	Gondola C, Manica C, Manica S, Sussendenga C, Sussendenga S, Barue S, Chimoio	1 221 429
Motorizadas	Chimoio	67 000 000
Rádios	Manica C, Sussendenga C, Sussendenga S, Barue S, Chimoio	458 000
Colchões	Sussendenga S, Chimoio	1 500 000
Relógio	Gondola C, Manica C, Manica S, Sussendenga S, Sussendenga C, Barue S, Chimoio	78 938
Paneis de alumínio	Manica C, Manica S, Chimoio	66 540
Galinha	Gondola C, Manica C, Manica S, Sussendenga C, Sussendenga S, Barue C, Barue S, Guro S	26 200
Porco	Gondola C, Manica C, Manica S, Sussendenga C, Sussendenga S, Barue C, Barue S, Guro S	234 938
Coelho	Sussendenga C	31 250
Cabrito	Gondola C, Manica C, Manica S, Sussendenga C, Sussendenga S, Barue C, Barue S, Guro S	194 375
Boi	Manica C, Manica S, Sussendenga C, Sussendenga S, Barue S	3 026 000
Burro	Sussendenga C	200 000

Abbreviations used: C: In the rural villages S: In the district capital

APPENDIX C

QUESTIONNAIRE: OIL COMPONENT

AFRICARE: LINHA DE BASE AGRICULTURA MANICA JUNHO 1997

AVISO

A Sr(a) tem direito a não participar nesta entrevista. A sua participação é inteiramente voluntária. No entanto vale a pena indicar que, caso de Sr(a) participar na entrevista, toda a informação recolhida será completamente confidencial - em nenhuma circunstância o seu nome será associado a nenhuma resposta.

Aceita participar nesta entrevista? _____

Nome do entrevistado/a _____	A0001
Há quanto tempo reside o chefe da família nesta aldeia? (numero de anos, se fugiu e depois regressou, só conta depois do regresso)	A0002
Aldeia/Bairro/Zona _____	A0003
Localidade _____	
Posto administrativo _____	
Distrito _____	A0004

Nome do Inquiridor:

Data da entrevista:

Revisado no campo por:

Data _____

A: COMPOSIÇÃO DO AGREGADO FAMILIAR

Gostariamos conhecer os membros residentes na casa e conversar sobre as actividades de cada um

<p>Nomes</p> <p>Quais são as pessoas que normalmente comem nesta casa?</p>	<p>Durante os últimos 12 meses, quantos meses estava nesta casa?</p>	<p>Relação ao chefe</p> <p>1 Chefe 2 Esposo/a 3 Filho/a 4 Pai/mae 5 Outro familiar 6 Outro (esp)</p>	<p>Sexo</p> <p>1 Masculino 2 Feminino</p>	<p>Idade</p> <p>(anos, 0 para crianças com menos de um ano)</p>	<p>Quantos anos completou na escola?</p>	<p>Durante os últimos 12 meses, quantas vezes [NOME] tem trabalhado nas machambas da família?</p> <p>1 Sempre 2 Muitas vezes 3 As vezes 4 Nunca 5 So durante a campanha agricola</p>	<p>Durante os últimos 12 meses, [NOME] tem trabalhado como pastor de animais?</p> <p>1 Sim 2 Não</p>	<p>Durante os últimos 12 meses [NOME] tem contribuido para a renda familiar fazendo alguma actividade economica a conta propria?</p> <p>(Ex. venda de bebida, carvão, carpintaria, fabricação de cestos, etc)</p> <p>-escrever a actividade-</p>	<p>Durante os últimos 12 meses [NOME] tem contribuido para a renda familiar vendendo a sua mão de obra? (ganho-ganho)</p> <p>(Ex. trabalhando na machamba do vizinho, ou da companhia, ou na fabrica, etc)</p> <p>-escrever a actividade-</p>
	A0005	A0006	A0007	A0008	A0009	A0011	A0012	A0013	A0014
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									

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:MATERIAIS DE CONSTRUÇÃO DA CASA

2	A família tem quantas casas?	B0201
3	O teto da casa principal é de que material? 1 Capim ou outro material natural 2 Zinco 3 Outro (esp) _____	B0301
4	Qual é a construção da casa principal? 1 Pau a pique 2 Bloco de Matope 3 Bloco de cimento ou tijolo (matope quemado) 4 Outro (esp) _____	B0401
5	A porta da casa principal é de que material? 1 Madeira 2 Outro material (esp) _____	B0501

C:INSTRUMENTOS DE PRODUÇÃO E OUTROS BENS

Instrumentos de produção			Outros bens		
Instrumento	Numero		Ben	Numero	
Enxadas	C0101		Maquinas de costura	C0102	
Catanas	C0201		Mesas de madeira	C0202	
Machados	C0301		Camas de madeira	C0302	
Pas	C0401		Bicicletas	C0402	
Ancinhos	C0501		Motorizadas	C0502	
Foices	C0601		Rádios	C0602	
Limas	C0701		Colchões	C0702	
Charruas de tracção animal	C0801		Relógio	C0802	
Carroça/barra	C0901		Panelas de Alumínio	C0902	

:FONTES DE RENDIMENTOS

7	A família recebeu remessas durante os últimos 12 meses? (1-Sim 2-Não)	D0701
8	Alguem de sua familia contribue a renda familiar fazendo alguma actividade como ...	1.Sim 2.Não
	Venda de culturas alimentares? (milho, mapira, feijao, tomate, etc)	D0101
	Venda de girassol/gergelim?	D0201
	Venda de outras culturas de rendimento? (algodão, tabaco)	D0301
	Venda de óleo produzido em casa? (girassol ou gergelim)	D0401
	Venda de gado/animais?	D0501
	Venda de alimentos feitos em casa? (pao, pasteis, bebidas tradicionais, etc)	D0601
	Auto-emprego nao agrícola? (como carpintaria, alfaiataria, cestos, etc)	D0701
	Compra e venda de roupas, comida, cigarros, fósforos, e outras coisas? etc	D0801
	Venda de recursos naturais? (como peixe, agua, lenha, mel, carne de caça, etc)	D0901
	Venda de produtos doados?	D1001
	Salários regulares ou temporários? (inclusivo ganho-ganho)	D1101
	Aposentados/outros dinheiros do governo?	D1201
	Outra actividade? -especificar _____	D0001 D1301

:TRABALHO NAS MACHAMBAS DE GERGELIM/GIRASSOL DAS OUTRAS PESSOAS

		Este ano?	Ano passado?
9	Alguém da sua família trabalhou nas machambas de gergelim/girassol das outras pessoas ... 1 Sim, gergelim 2 Sim, girassol 3 Sim, ambos 4 Não	E0901	E0902
10	Quantos membros da sua família? (trabalham nas machambas de gergelim/girassol das outras pessoas)	EO903	EO904

:COMPRAS

1- Sim 2- Não

12	A família comprou roupa nova (não inclua roupa usada ou capulana) nos últimos 12 meses?	F1201
13	A família comprou carne durante os últimos 12 meses?	F1301

G:FALTA DE ALIMENTOS

14	Durante o ano passado, em que meses teve maiores problemas com a alimentação? 1-Sim ou 2- Não	Janeiro G1401 _____ Fevereiro G1402 _____ Março G1403 _____ Abril G1404 _____ Maio G1405 _____ Junho G1406 _____	Julho G1407 _____ Agosto G1408 _____ Setembro G1409 _____ Outubro G1410 _____ Novembro G1411 _____ Dezembro G1412 _____
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:CONSUMO DE OLEO

15.	Quantas vezes a sua família cozinha a refeição principal com óleo? 1. Nunca 4 Uma vez por semana 7 Depende da época (esp) 2 Todos os dias 5 Algumas vezes por mês _____ 3 2 vezes ou mais por semana 6 De vez em quando (esp) _____	H1501
16	Quantas vezes a sua família normalmente compra óleo? 1 Nunca 4 Uma vez por semana 7 Depende da época (esp) 2 Todos os dias 5 Algumas vezes por mês _____ 3. 2 vezes ou mais por semana 6. De vez em quando (esp) _____	H1601
17	A onde a sua família costuma conseguir óleo? 1. Dum privado 3 De outra aldeia 5 No Chimoio 2 No mercado ou loja de sua aldeia 4 Na sede do distrito 6 Outro sitio _____	H1701
18	Quantas vezes a sua família utiliza óleo de girassol/gergelim da prensa vizinha/própria? 1. Nunca 4 Uma vez por semana 7 Depende da época (esp) 2 Todos os dias 5 Algumas vezes por mês _____ 3 2 vezes ou mais por semana 6 De vez em quando(esp) _____	H1801

INFORMAÇÕES AGRICOLAS

25	Tem rádio que funciona? (1- Sim, 2- Não)	I2501
28	Escuta os programas de conselhos para produtores que costumam passar na rádio? (1 Sim, 2 Não)	I2801
29.	(Se não escuta) porque? N/A 1. Não tem rádio/não funciona 2. Ninguém tem rádio/não sabe onde ir 3 Não esta interessado 4 Não tem tempo 5. Outro - especificar- _____	I2901

SERVÍCIOS DE EXTENÇÃO AGRICOLA

30	Neste ano, recebeu visitas de algum extensionista na area de agricultura? (1.Sim 2 Não)	J3001
31.	(Se teve visita) era de quem? (1 Sim, 2 Não, N/A)	
	DDA	J3101
	Concern	J3102
	GTZ	J3103
	UNICEF	J3104
	Redd Barna	J3105
	Africare	J3106
	CN de Algodão	J3107
	Tabacos de Manica	J3108
	Outro (esp) _____	J3100 J3109
32	Neste ano, viu alguma demonstração por parte de um extensionista na area de agricultura? (1 Sim, 2 Não)	J3201
33	(Se viu demonstração) que foi demonstrado? _____	J3301

criação dos animais

34.	Numero que a familia possui	O que lhes dá de comer?	Codigo
Galinha	K0101		K0201
Porco	K0102		K0202
Coelho	K0103		K0203
Cabrito	K0104		K0204
Boi	K0105		K0205
Burro	K0106		K0206
gato	K0107		K0207
Pombo	K0108		K0208
Outro	K0109		K0209

L:PRODUÇÃO E DESTINO DE CULTURAS PRINCIPAIS DA CAMPANHA PASSADA

Cultura	Durante a campanha passada, o seu agregado teve produção de ... 1 Sim 2 Não	(Se não foi a primeira vez que plantou) quantos anos produziu algodão/tabaco? (N/A)	Quantas vezes por ano produz esta cultura? (N/A)	(Se não foi a primeira vez que plantou) Ao comparar entre este ano e o ano passado, a produção deste ano foi como? 1 Mais 2 Menos 3 Mesma 4 Não sabe N/A	Qual foi o destino da sua produção? -utilize 20 feijões-					(Se vendeu, ou trocou) Quanto vendeu/trocou?		
					Venda (troca) (N/A)	Consumo (N/A)	Guardou (N/A)	Perdeu (N/A)	Outro (N/A)	Estado (Codigos em baixo) (N/A)	Qt. (N/A)	Unidade (N/A)
Milho	L0101	/	L0104	L0105	L0106	L0107	L0108	L0109	L0110	L0111	L0112	L0113
Feijao Nhemba	L0201	/	L0204	L0205	L0206	L0207	L0208	L0209	L0210	L0211	L0212	L0213
Feijao Manteiga	L0301	/	L0304	L0305	L0306	L0307	L0308	L0309	L0310	L0311	L0312	L0313
Mapira	L0401	/	L0404	L0405	L0406	L0407	L0408	L0409	L0410	L0411	L0412	L0413
Amendoim	L0501	/	L0504	L0505	L0506	L0507	L0508	L0509	L0510	L0511	L0512	L0513
Arroz	L0601	/	L0604	L0605	L0606	L0607	L0608	L0609	L0610	L0611	L0612	L0613
Mandioca	L0701	/	L0704	L0705	L0706	L0707	L0708	L0709	L0710	L0711	L0712	L0713
Mexeira	L0801	/	L0804	L0805	L0806	L0807	L0808	L0809	L0810	L0811	L0812	L0813
Algodão	L0901	L0903	L0904	L0905	L0906	L0907	L0908	L0909	L0910	L0911	L0912	L0913
Tabaco	L1001	L1003	L1004	L1005	L1006	L1007	L1008	L1009	L1010	L1011	L1012	L1013
Bananas	L1101	/	L1104	L1105	L1106	L1107	L1108	L1109	L1110	L1111	L1112	L1113
Citricos	L1201	/	L1204	L1205	L1206	L1207	L1208	L1209	L1210	L1211	L1212	L1213
Tomates	L1301	/	L1304	L1305	L1306	L1307	L1308	L1309	L1310	L1311	L1312	L1313
Cebolas	L1401	/	L1404	L1405	L1406	L1407	L1408	L1409	L1410	L1411	L1412	L1413
Alho	L1501	/	L1504	L1505	L1506	L1507	L1508	L1509	L1510	L1511	L1512	L1513
Inhame	L1601	/	L1604	L1605	L1606	L1607	L1608	L1609	L1610	L1611	L1612	L1613
Batata doce	L1701	/	L1704	L1705	L1706	L1707	L1708	L1709	L1710	L1711	L1712	L1713
	L1801	/	L1804	L1805	L1806	L1807	L1808	L1809	L1810	L1811	L1812	L1813

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M:AGRICULTURA GERAL

	Quantas machambas a familia cultivou durante esta campanha? (# de machambas)	M3601
37	Utilizou adubo químico em alguma machamba durante este ano? (1 Sim 2 Não)	M3701
	Utilizou outro insumo (semente melhorada, insecticida, herbicida) em alguma machamba este ano (1 Sim 2 Não)	M3801
38	A familia recebeu fomento de alguma empresa durante este ano para a produção de uma cultura de rendimento? (1 Sim 2 Não) Cultura _____	M3901
		M3902
	A empresa garante a compra desta cultura de rendimento? (1.Sim 2 Não, N/A)	M4001
41	A familia vendeu milho alguma vez durante os últimos 12 meses? (1 Sim 2 Não)	M4101

N:PRODUÇÃO DE GERGELIM E GIRASSOL

-a cultivou gergelim ou girassol? (1 Sim, 2 Não)		Gergelim	Girassol
42	(Se já cultivou gergelim/girassol) quantos anos produziu esta cultura? (# anos, 97- mais de 10 anos, N/A)	N4201	N4202
43	Quando foi a última campanha que cultivou esta cultura? 1. Nunca 3 Ha 5-10 anos 5. No ano passado 2. Ha mais de 10 anos 4. Ha 2-5 anos 6. Neste ano	N4301	N4302
44	Porque nunca cultivou ou parou de cultivar esta cultura? 1 Falta de sementes 4 Falta de colocação (mercado) N/A 2. Falta de terra 5 Problema de armazenamento 3 Falta de mão-de-obra 6 Outro -especificar _____	N4401	N4402
		N4403	N4404

-Se nunca cultivou, acabar com a entrevista- (N/A)

45	Quem decide semear esta cultura? 1 Homen 3 Ambos 2 Mulher 4 Outro-especificar _____	N4501	N4502
46	Quantas sementes costuma colocar em cada covacho? (# sementes, 98. Não sabe, 99 Outro- esp _____)	N4601	N4602
47	Quantas plantas costuma deixar crescer em cada covacho? (# plantas, 98 Não sabe, 99 Outro- esp _____)	N4701	N4702
48	Qual e o intervalo que costuma usar entre as linhas? (# de cms, 98- Não sabe, 99 Outro- esp _____)	N4801	N4802
	Qual e o intervalo que costuma deixar entre plantas? (# de cms, 98- Não sabe)	N4901	N4902
	Costuma plantar em consorcio com outras plantas? (1 Sim, 2 Não) Com quais culturas? esp	N4903 N4905 N4907	N4904 N4906 N4908
49	Vendeu esse produto nos últimos 5 anos? (1-Sim, 2-Não)	N5001	N5002
50	A quem vendeu a maior quantidade? 1 Moçambique Industrial 3 Agricom 5 Outro-esp. N/A 2 Comerciante 4 Grassol Manica _____	N5101	N5102
51	Teve algum problema para vender este producto? 1 Nada 6 Falta de produção N/A 2 Falta de compradores 7. Problemas de preço 3 Mercado fica distante 8 Custo de transportaçã 4 Falta de qualidade de produto 9 Outro (esp) _____ 5 Problema de armazenamento até venda	N5201	N5202
		N5203	N5204
		N5205	N5206

7: PRODUÇÃO DE GIRASSOL OU GERGELIM DO ANO PASSADO

		Gergelim	Girassol
53	Cultivou no ano passado? (1-Sim, 2-Não)	N5301	N5302
54.	(Se não cultivou) Porque? N/A 3 Falta de mão-de-obra 6. Outro (esp) 1. Falta de semente 4 Falta de mercado 2. Falta de terra 5 Problema de armazenamento	N5401	N5402
		N5403	N5404
-Se não cultivou no ano passado, passar a secção P- (N/A)			
55.	No ano passado, qual foi a origem da maior parte das sementes? 1. Guardou do ano passado 5 Comprou do vizinho/dum privado 2. Doação da DDA 6 Comprou do mercado/loja 3. Doação de Moçambique Industrial 7 Outro-especificar- 4 Trocou	N5501	N5502
56	No ano passado, quantos sementes semeou?	Quantidade	N5601
		Unidade	N5603
57.	A machamba desta cultura sofreu de quê? 1. Nada 3. Bichos 5 Roubos 7 Outro especificar 2 Doenças 4 Passarinhos 6 Ratos	N5701	N5702
		N5703	N5704
58	No armazenamento, perdeu sementes devido a quê? 1 Nada 4 Humidade 7. Outro -especificar- 2 Bichos 5 Passarinhos N/A 3 Ratos 6 Roubos	N5801	N5802
		N5803	N5804
59.	Quanto colheu?	Quantidade	N5901
		Unidade	N5903
60	Qual foi o destino da cultura? -utilize 20 feyoes-	Venda	N6001
		Produção de Oleo para venda	N6003
		Produção de Oleo para consumo	N6005
		Sementes	N6007
		Perdeu	N6009
		Consumo	N6011
		Guardou	N6013
51	Quanto vendeu?	Quantidade	N6101
		Unidade	N6103
52	Qual era o preço? (\$ em meticais, 98- Não sabe, N/A)	Quantidade	N6201
		Unidade	N6203

P: PRODUÇÃO DE GERGELIM OU GIRASSOL ESTE ANO

		Gergelim	Girassol
64	Cultivou neste ano? (1-Sim, 2-Não)	N6401	N6402
65.	(Se não cultivou) Porque? N/A	N6501	N6502
	1 Falta de semente 2 Falta de terra 3. Falta de mão de obra 4. Falta de mercado 5. Problema de armazenamento 6. Outro (esp)	N6503	N6504
-Se não cultivou neste ano, acabar com a entrevista- (N/A)			
66	Neste ano, qual foi a origem da maior parte das sementes? 1 Guardou do ano passado 2. Doação da DDA 3 Doação de Moçambique Industrial 4 Trocou 5 Comprou do vizinho/dum privado 6 Comprou do mercado/loja 7 Outro-especificar-	N6601	N6602
67	Neste ano, quantos sementes semeou?	Quantidade	N6701
		Unidade	N6703
68	Empregou mão de obra para trabalhar na machamba? (1-Sim, 2- Não)	N6801	N6802
70	Quantas pessoas empregou? (N/A; # de pessoas)	N7001	N7002
71	A machamba desta cultura sofreu de quê? 1 Nada 2 Bichos 3 Ratos 4 Passarinhos 5 Roubos 6 Doenças 7 Outro especificar	N7101	N7102
		N7103	N7104
72	Quanto colheu ou espera colher? (98-Não sabe)	Quantidade	N7201
		Unidade	N7203
73	Se comparar ao ano passado, a produção deste ano foi como? N/A 1. Mais 2 Menos 3 A mesma 4 Não sabe	N7301	N7302
74	Que quantidade espera vender? (98-Não sabe)	Quantidade	N7401
		Unidade	N7403
75.	Qual é o preço neste ano? (\$ em meticais, 98- Não sabe)	Quantidade	N7501
		Unidade	N7503

Q: TERRA CULTIVADA PARA GIRASSOL/GERGELIM ESTE ANO

	Qual é a cultura?	Qual é a distância da casa?	Qual é a área? (Indicar se a unidade é hectares ou m ²)	Qualidade da terra? 1 Fértil 2 Regular 3 Cansada
Machamba #1	Q0101 1 Gergelim 2 Girassol	Q0102 1 0-30 minutos 2 30-60 minutos 3 Mais de uma hora	Q0103	Q0104
Machamba #2	Q0201	Q0202	Q0203	Q0204
Machamba #3	Q0301	Q0302	Q0303	Q0304
Machamba #4	Q0401	Q0402	Q0403	Q0404

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ACKNOWLEDGEMENTS

The baseline survey would not have been possible without the hard work and dedication of the following people:

Veronica Fletcher, a consultant, who designed the survey and planned and coordinated the execution of field work Bill Noble, the national Director, Collin A Elias, the Project Coordinator and Bill Messiter, the oil component Coordinator who provided general guidance and support

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**AFRICARE/USAID MANICA OIL SEED
FOOD SECURITY INITIATIVE**

AGRICULTURAL BASELINE SURVEY

Prepared for AFRICARE Mozambique by
Isabelle Schmidt
Research Consultancy Services, Beira
September 1997

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Data was entered by 4 persons with prior data entry experience. They worked in teams of 2 to double check all entries. One person dictated the codes while the other entered them into the computer. After completing one set of questions, the person at the computer read the codes entered while the first person verified the codes with those on the questionnaire. This method was chosen instead of having each person enter data on their own for the following two reasons. First there were only 2 computers available for data entry. Second, there were many large tables of data to be entered and the data capturers were more likely to lose their place on the page while looking back and forth from the computer screen to the questionnaire, thus increasing the odds of entering codes out of sequence. As an additional precaution, records were spot-checked and the database was scrutinized for inconsistencies.

Upon completion of data-entry, diskettes were given to a Research Statistician who completed the analysis and interpretation. The agricultural survey data sets were given for analysis in early August, followed by the nutrition data-sets in mid-August.

Recommendations For Future Household Surveys

- 1) At mid-term, it would be preferable to repeat the survey in the same communities that were surveyed at the baseline but not necessarily in the same households. However, if Africare's activities have shifted significantly to new areas not part of the original target areas, another strategy may have to be developed. If population estimates have to be revisited, the best source would be data from the population census of August 1997.
- 2) An attempt could be made to compare communities participating in Africare's program with those who are not. Careful attention however should be given to the analysis and comparison of characteristics of the two groups at baseline to determine any significant differences. Also the sample sizes of the two groups (participating versus non-participating) are probably not large enough to make such a comparison.
- 3) For the mid-term and final survey, questionnaires should be shortened to include the most useful indicators for evaluation of the program. All questions included at baseline for program planning purposes could probably be eliminated. For example, in the agriculture questionnaire, Section H questions 16 and 17, all of Section I, Section K "o que lhes dá de comer? (what do you give them to eat?)", Section L "quantos anos produziu algodão/tabaco (How many years have you grown cotton/tobacco?)" could be taken out. Sections N, O & P could be significantly cut back. Some of the general food security questions may also not be necessary. In the nutrition questionnaire, Section E could be shortened to include only the best question (s) for determining diet and Section B could be cut back to 1 or 2 questions about vegetable growing. With shorter questionnaires, the sample of households interviewed could be increased.
- 4) Once shortened, the 2 questionnaires could probably be combined into one. This would make it possible to collect all measurements from the same household. There would then be two options available to either conduct interviews only in households with children under five or to select any household but increase the sample size to ensure that an adequate number of children under five are sampled.

- 5) New codes should be added for "other" answers identified during the baseline. This should reduce time spent writing down answers and post-survey coding.
- 6) The time period should always be specified (for example questions #15 and #18 for agriculture and #14 and #15 for nutrition should refer to the last 12 months).
- 7) It is not normally valuable to add any questions at mid-term for which there would be no baseline value. However, the following questions may prove to be useful:
 - The experience in Barue and Guro districts of families consuming pig fat in significant quantities may warrant an additional question to find out if any type of animal fat is used instead of vegetable oil. This would provide a possible explanation if vegetable oil consumption does not increase as expected.
 - A few questions could be added to monitor Africare's outreach activities such as "Participam em alguma actividade de Africare? (Have you participated in Africare's activities?) Quais actividades? (Which Activities?) Quantas vezes a sua familia recebe informação de um extensionista/activista de Africare na area de saúde? (How often has your family received information from an Africare activist/extensionist about health?) Na area de agricultura? (About Agriculture?)"
- 8) During training, more time should be spent on 24 diet recalls and problem questions identified discussed above. Translation into local dialects may be worthwhile.
- 9) Dialogue should be maintained with MSU for accurate definitions of all terms used in questions relating to measurement of income, such as "house" and "family-owned businesses" versus "salaried work".
- 10) More time should be spent to prepare the sites for the arrival of interviewers and adequate accommodation are secured ahead of time. The role of the local guides should be discussed and if their presence is needed, an agreement should be reached with local authorities about how they should be compensated.
- 11) If the length of the questionnaires remains the same, the survey schedule could be accelerated since after the first week, interviewers were able to complete on average 3.5 interviews per day, instead of 2.5 as originally expected.
- 12) If possible it is preferable to have fewer interviewers to be able to supervise more frequently in the field. The M & E coordinator will no longer need to spend a lot of time preparing the database and could spend more time in the field during the first few weeks of the survey observing the interviewing process.
- 13) It is usually recommended to conduct subsequent surveys during the same months as in the baseline. However, since harvesting of oilseed crops (sesame and sunflower) can extend into the month of August, it might be more useful to postpone the survey one month to collect more complete information about that year's total production.

Documents Consulted

- CARE's baseline questionnaire for the OPEN project (March 1995)
- World Vision's Socio-Economic baseline questionnaire (July-August 1996)
- Model Knowledge, Practice and Coverage (KPC) Survey Questionnaire (1996)
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- Draft questionnaire for income proxies module, Dave Tschirley/MSU (May 2, 1997)
- The EPI coverage survey: Training for mid-level managers, WHO (1991)
- Inquerito Nutricional Rapido, Distrito de Guro, Provincia de Manica, MSF-CIS/ACNUR Maputo (Abril 1995)
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- Smallholder cash cropping, food cropping, and food security in Northern Mozambique research methods, MAP/MSU Research Team/Ministry of Agriculture, Working Paper No 22 (March 1996)
- Mozambique Trip Report of Eunyoung Chung, USAID/G (September 1996)
- Monitoring and Evaluation Framework, Manica Oilseed Food Security Initiative (February 1997)
- Survey Trainer's Guide for PVO Child Survival Project Rapid KPC Coverage Surveys, John Hopkins University (May 1994)
- Manual do Inquiridor, Inquérito Nacional aos Agregados Familiares sobre Condições de Vida, Ministério do Plano e Finanças/Direcção Nacional de Estatística (Novembro 1995)
- Manual do Inquiridor, MSF-CIS/AEDES (Abril 1997)
- Nutrition and Food Security Baseline. Tambara, Macossa districts and Dombe/Sussundenga, MARRP-GTZ (1996)
- Estudo sobre Economia Alimentar do Distrito de Barue, DPS, Chimoio (Outubro 1996)
- Estudo sobre Economia Alimentar do Distrito de Sussundenga, DPS, Chimoio (Julho 1996)
- Estudo sobre Economia Alimentar do Distrito de Manica, DPS, Chimoio (Novembro 1996)
- Estudo sobre Economia Alimentar do Distrito de Gondola, DPS, Chimoio (Abril 1997)
- Perfis de Desenvolvimento Distrital, Distrito de Barue, Provincia de Manica, ACNUR/PNUD, Maputo (Julho 1996)
- Perfis de Desenvolvimento Distrital, Distrito de Sussundenga, Provincia de Manica, ACNUR/PNUD, Maputo (Julho 1996)
- Perfis de Desenvolvimento Distrital, Distrito de Gondola, Provincia de Manica, ACNUR/PNUD, Maputo (Julho 1996)
- Perfis de Desenvolvimento Distrital, Distrito de Guro, Provincia de Manica, ACNUR/PNUD, Maputo (Julho 1996)

Population Estimates of Target Areas

** communities originally selected as clusters that had to be replaced due to inaccessibility

() substitute communities

GONDOLA (Total of target area = 108,831)

Posto administr.	Localidade	Aldeia/Bairro	Populacao	Cumm	Cluster #
Gondola Town					
Inchope	Sede				
	Muda Serracao				
	Doeroi	Sede	1559	1559	
		25 de Junho	1250	2809	
		Centro de Metuchira	3799	6608	1
		A Luta continua	1463	8071	
		Centro de Acomodaçao Doiroi	681	8752	2
		7 de Abril	3450	12202	
Amatongas	Sede				
	Nhambonda				
	Pidanganga	Chipindaumue	3107	15309	3
		Nhamakoa			
		Nhamazizi			
		Barragem	579	15888	
		Mussatua			
		Pindanganga-Centro	446	16334	4
		Mussamba	372	16706	
		Mucombedze	334	17040	
		Mutenga			
		Nhamazamba			
		Mussiquire	547	17587	
		Nharunharo?			
		Chifupe?			
		Mussequene?			

MANICA (Total of target area = 62,353)

Posto administr.	Localidade	Aldeia/Bairro	Populacao	Cumm	Cluster #
Manica	Cidade de Manica				
Mavonde	Mavonde-sede				
Mavonde	Chitunga	Perai (sede)	805	109636	
		Mucono	905	110541	
		Mucombuc	1084	111625	27
		Dazi	385	112010	
		Garuzo	94	112104	
Vanduzi	Vanduzi-sede	Mungura	402	112506	
		Marongorongu	1189	113695	
		Belas 1 Munharari	159	113854	
		Belas 1	2085	115939	28
		Ald. Charewa	1427	117366	
		Josina Machel Macora	1729	119095	
		Almada	1870	120965	29
		25 de Setembro	1027	121992	
		Verde	2753	124745	30
		Chimuanadimai	1905	126650	
		Bairro Centro	2209	128859	31
		Bairro Escola	1927	130786	
		25 de Junho	1183	131969	32
		Cafungura	479	132448	
		Chinhamacungo	130?	132578	
Vanduzi	Chigodole				

Vanduzi	Pungue-Sul	Joaquim Alberto Chissano	1613	134191	
		Mudzidzi	219	134410	
		Muzenga	271	134681	
		Macora	368	135049	
		Chitundo	2541	137590	33
		Mucombedzi	817	138407	
		Nhamundimo	293	138700	
		Macadera?	412?	139112	
		Nhamassana?	345?	139457	
		Nhamatiquiti	782	140239	34
		Mahunde	101	140340	
		Centro	485	140825	
		Lore?	843?	141668	
		Mavudzi	872	142540	
Machipanda	Maridza				
	Machipanda-Sede				
	Muzongo				
Messica	Messica-Sede	Bairro Vila Messica	782	143322	
		2 B. VilaMessica	1227	144549	35
		3 B. VilaMessica	1453	146002	
		4 B. "	1060	147062	
		5 B. "	1113	148175	36
		6 B. "	1500	149675	
		Bairro Manica-A. De Messica	1611	151286	
		B.Chimoio	2002	153288	37
		B Bandula	668	153956	
		B.7 de Abril	722	154678	

		B.Machicanda	940	155618	
		B.Mutsé	857	156475	38
		B.Mutanda	1145	157620	
Messica	Nhaucaca				
Messica	Chinhambud zi				
Messica	Bandula	1 BairroBandula	2292	159912	
		Ald. Garuzo	2272	162184	39
		2 BairroBandula	948	163132	
		Repatriados de Zimbabwe	61	163193	
		Ald. Chicamba Real	2241	165434	40
		Ald. Nova Revué	2032	167466	
		3 BairroBandula	2047	169513	41
		Bairro Mutunango	1301	170814	
		BairroMatrabelo	370	171184	

SUSSUNDENGA (Total of target area = 52,824)

Posto administr.	Localidade	Aldeia/Bairro	Populacao	Cumm.	Cluster #
Sussundenga	Sussundenga Sede	Nhamezara	4795	175979	42
		Nhamarenza			
		25 Junho 1	3012	178991	43
		25 Junho 2	2014	181005	44
		Muzoria			
		7 de Abril	1600	182605	
		Unidade	311	182916	
		Chicueu	2183	185099	45
		Samora Machel	350	185449	
		Chizizira	221	185670	
		Tave	1013	186683	
		Chacimba	1015	187698	
		Buabua	334	188032	
		Nhamawaia	1004	189036	46
		Nhanguze	3086	192122	
		Chipandequ	604	192726	
	Munhinga 2	Munhinga-sede	165	192891	
		Chingundo	120	193011	
		Nhamacomba			
		Matira			
		Chumbua	437	193448	47
		Cortina de Ferro	645	194093	
		V Congresso	363	194456	
		Chido Choparo			
		Mamacuio	249	194705	
		Bloco 5	132	194837	
Sussendenga	Nhaurombe				

Sussendenga	Matica				
Rotanda	Rotanda-Sede	Rotanda-sede	410	195247	
		Chirodzo	270	195517	
		Zuandi	750	196267	
		Mussambudzi (tsetsera)	1050	197317	48
		Chinhacata	150	197467	
	Munhunga 1	Munhunga-sede	573	198040	
		Mutoa			
		Nhagonzua	300	198340	
	Mussapa	Mapombere-sede	550	198890	
		Gudza	1010	199900	
		Matsia	600	200500	
		Matova	300	200800	
	Pheza	Pheza-sede			
		Nhaezi			
		Mabate			
Muoha	Muoha-Sede	Muoha-sede	497	201297	(49)
		Vigilancia/Murorue	415	201712	**
		Chivuma	515	202227	
		Mukuti			
		Mutore	?		
		Munhadze	1481	203708	
Muoha	Mupandeia				

GURO (Total of target area = 43,143)

Posto administrativo	Localidade	Aldeia/Bairro	Populacao	Cumm	Cluster #
Guro	Sede/Sanga	Sanga	5716	229724	**
		Nhansana	3212	232936	56
		Mupha	541	233477	
		5 Congresso	3356	236833	**
		Tsetse Kama A	2910	239743	58
		Tsetse Kama B	1607	241350	(57)
		1 de Maio A	2283	243633	59
		1 de Maio B	2409	246042	(55)
		Tongogara A	1700	247742	60
		Tongogara B	1500	249242	
		Tongogara C	800	250042	
		Tongogara D	600	250642	
		Samora Machel A	1497	252139	61
		Samora Machel B	2330	254469	
		Catoé-local	1097	255566	62
		Calombolombo	450	256016	
Guro-Sede	Bunga				
Mungari	Mungari-Sede	25 de Setembro	1479	257495	
		A Luta Continua	744	258239	
		Juliasse Nyerere	1099	259338	63
		Nhabesse	462	259800	
		Catoé	1322	261122	
		Chiganda	616	261738	

Mungari/	Chivuli	7 de Abril-Sede	692	262430	
		3 de Fevereiro	732	263162	64
		Lolongué	942	264104	
Mungari	Bamba (Chitondo)				
Nhamassonge	Nhamassonge- Sede	Nhacassangano	449	264553	
		Nhamoa	907	265460	
		Mapangara	512	265972	
		Cabere Monde	347	266319	
		Chiruto?	481	266800	
		Nhamassonge-Sede "Phumphwa"	351	267151	65
Nhamassonge	Nhacaduzuduzu				
Nhamassonge	Thanda				
Mandié	Mandié-sede				
	Massangano				
	Demaufe				

VARUÉ (Total of target area=53,649)

Posto administr.	Localidade	Aldeia/Bairro	Populacao	Cumm	Cluster #
Choa	Choa-sede				
	Nhauroa				
Catandica	Sede	1 de Maio	5082	272233	66
		7 de Abril	2164	274397	
		3 de Fevereiro	868	275265	
		Sanhantunzi	2851	278116	67
		Nhamissundo	229	278345	
		Botone	651	278996	
		Cagore			
		Muteua	750	279746	**
		Chowa	923	280669	
		M'panze	871	281540	
		Sigma	459	281999	
		Vulomite	327	282326	
		Pique	273	282599	
		Sabao	3831	286430	69
Catandica	Chiula	Honde	2084	288514	70
		Nhomatema	1605	290119	
		Mussianharo	605	290724	
		Nhamizinga	978	291702	
		Chiuala	688	292390	71
		Nhancangare	1263	293653	

Posto administr.	Localidade	Aldeia/bairro			
Catandica	Nhazonia	Maputo	1107	294760	
		Tangadzi	776	295536	
		Matundu	673	296209	72
		Macossa	867	297076	
		GuinhaPutu	454	297530	
		Chindangue	1014	298544	
		Nhangaze	1554	300098	73
		Nhamoca	619	300717	
		Nhachanzue	792	301509	
		Chozo	1236	302745	
		Nhatumbo			
Nhampassa	Nhampassa-Sede	Sede	2960	305705	74
		Nhangagaro			
		Nhamagiwa			
	Nhassacara	Sede	6244	311949	75
		Nhantuchu	1224	313173	76
		Patanguena	1159	314332	
	Fudzi (Cruzamento?)	Sede	2135	316467	(68)
		Pandiera	1088	317555	77
		Nhantucutira	2330	319885	
		Camazashenga	915	320800	78

Grand total of target areas in 5 districts = 320,800

CLUSTER SELECTION

DIS TRICT	POST	LOCALITY	CLUSTERS
GONDOLA Total: 25 clusters	Inchope	Doeroi	Centro de Metuchira (1) Centro de Acomodação Doeroi (2)
	Amatongas	Pindanganga	Chipindaumwe (3) Pindanganga-centro (4)
	Macate	Macate	Macate-sede (5) Mevumbe (6) Macuenjere (7 & 8) Musangadzi interior (9 & 10)
		Marera	Matamira (13) Zinaia (14)
		Chissassa	Fernandes (15) Nhamatanda (16) Chissassa-sede (17)
		Maconha	Macoropa (18) Josina Machel (19) Nharimiro (11)
	Zembe	Zembe-sede/ Trangapasso	Revue-Kamba (20) Chauranga (21) Ripongue (22)
		Boavista	Nhanda (23) Nhaulanga (24)
	Cafumpe	Chiongo	Tique-Tique (25)
		Pumbuto	Pumbuto-sede (26)

DISTRICT	POST	LOCALITY	CLUSTERS
MANICA Total: 15 clusters	Mavonde	Chitunga	Mucombue (27)
	Vanduzi	Vanduzi	Belas 1 (28) Almada (29) Verde (30) Bairro Centro (31) 25 de Junho (32)
		Pungue-sul	Chitundo (33) Nhamatiquiti (34)
	Messica	Messica	2ºBairro Vila Messica (35) 5ºBairro Vila Messica (36) Bairro Chumoio (37) Bairro Mutsé (38)
		Bandula	Aldeia Garuzo (39) Chicamba Real (40) 3ºBairro Bandula (41)
	SUSSUNDENGA Total: 14 clusters	Sussendenga	Sussendenga-sede
Munhinga 2			Chimbúa (47)
Rotanda		Rotanda	Mussambudzi (tsetsera) (48)
		Munhinga 1	Ø
		Mussapa	Ø
Muoha		Muoha	Mavita-sede (49)
Dombe		Mabaia	Moiana (50) Chigumete (51)
		Darue	Ndongue (52) Sanguene (12)
		Matarara	Tussene (53) Macocue (54)

DISTRICT	POST	LOCALITY	CLUSTERS
GURO Total : 11 clusters	Guro	Guro-sede	1 de Maio B (55) Nhansana (56) Tsetsekama B (57) Tsetsekama A (58) 1 de Maio A (59) Tongogara A (60) Samora Machel A (61) Catoc-local (62)
	Mungari	Mungari	Juliasse Nyerere (63)
		Chivuli	3 de Fevereiro (64)
	Nhamassonge	Nhamassonge	Phumphwa (65)
	BARUE Total: 13 clusters	Catandica	Catandica-sede
Chiwala			Honde (70) Chiwala-centro (71)
Nhazonia			Matundu (72) Nhangaze (73)
Nhampassa		Nhampassa	Nhampassa-sede (74)
		Nhassacara	Nhassacara-sede (75) Nhantuchu (76)
		Fudzi	Pandiera (77) Camazashenga (78) Fudzi-sede (68)

**Africare/Mozambique
Manica Oil Seed Food Security Initiative
Baseline Indicator And Annual Target Revision
September 30, 1997**

Page 1 Component And Indicator Narrative Description	Indicator Type									
	Impact					Monitoring				
	FY 1997 Baseline	FY 1998 Year 2	FY 1999 Year 3 Mid-Term	FY 2000 Year 4	FY 2001 Year 5 End-Line	FY 1997 Baseline	FY 1998 Year 2	FY 1999 Year 3 Mid-Term	FY 2000 Year 4	FY 2001 Year 5 End-Line
Oils Promotion Component										
Goal Level										
1) Average Household Income within the target areas increases % as measured by income proxies	TBD	N/A	TBD	N/A	TBD					
2) Average Cash Income from oil seed production increases by \$46 per HH for Sesame and \$97 per HH for sunflower										
Sesame	\$14	\$24	\$36	\$49	\$60					
Sunflower	\$12	\$35	\$65	\$87	\$109					
3) Percent Of Targeted Households That Receive Cash Income From The Sale Of Oil Seed	7%	12%	18%	22%	25%					
4) Average Cash Income (gross profit) from oil seed processing increases \$2,228 per participating household	\$172	\$400	\$1,008	\$1,920	\$2,400					
Purpose Level (End Of Project Status)										
5) Oil Seed production (HA's planted) within target areas increases by 500 HA's/sesame and 5,700 HA's/ Sunflower										
Sesame	463	600	700	750	900					
Sunflower	70	1,000	3,000	4,500	5,800					
Total Area Planted	533	1,600	3,700	5,250	6,700					
6) 75% of village-based presses will have been operating for more than two years	N/A	N/A	19	64	128					
Output level										
7) A minimum of 400 field demonstrations of oil seeds and processing techniques are completed						65	110	100	75	50
8) Collaborative partnerships established in 100% of target communities to promote oil seed production and sale						0%	20%	40%	80%	100%
9) _____ KG's of Oil Seed harvested per year in the target areas										
Sunflower						35,000	500,000	1,500,000	2,250,000	2,900,000
Sesame						162,050	210,000	245,000	262,500	315,000
Total						197,050	710,000	1,745,000	2,512,500	3,215,000
10) _____ farmers planting oil seed per year in the target areas						4,492	6,219	8,706	10,448	12,537
11) _____ KG's of planting seed sold and/or planted in the target areas										
Seed Sold						0	12,000	24,000	40,000	40,000
Retained Seed						3,493	8,000	4,000	6,000	10,000
Total Seed Planted						3,493	20,000	28,000	46,000	50,000

Note Baseline Values Are Actual, Taken From Baseline Survey and Secondary-Source Data-Gathering, Conducted June - September 1997

Page 2 Component And Indicator Narrative Description	Indicator Type									
	Impact					Monitoring				
	FY 1997 Baseline	FY 1998 Year 2	FY 1999 Year 3 Mid-Term	FY 2000 Year 4	FY 2001 Year 5 End-Line	FY 1997 Baseline	FY 1998 Year 2	FY 1999 Year 3 Mid-Term	FY 2000 Year 4	FY 2001 Year 5 End-Line
Oils Promotion Component Cont.										
12) 370 oil seed presses sold in the target areas						27	60	85	100	100
13) 100% of retail sales of oil seeds, presses and spare parts made by commercial agents in the target areas	0%	25%	60%	90%	100%					
14) Commercial entities are multiplying and selling 100% of the planting seed	0%	30%	70%	90%	100%					
15) 70% of presses sold by Africare are sold with credit						20	42	60	70	70
16) Per Cent of Borrowers that pay off their loans on time						N/A	70%	85%	90%	90%
17) 30 repair artisans trained and offering repair services						0	10	0	10	10
18) 300 sales agents trained in oil seed, press and spare parts sales						0	90	150	240	300
19) _____ liters of oil produced by oil presses						2,650	21,250	102,000	324,000	555,000
20) Oil Seed Extension Services provided to ___% of Target Households	0%	5%	12%	17%	20%					
Household Nutrition Component										
Goal Level										
1) ___% reduction in stunting in the total population of under 5 children in the target area	50%	N/A	47 50%	N/A	45%					
Purpose Level (End Of Project Status)										
2) Nutrition Education activities established in ___% of target communities						0%	N/A	40%	N/A	80%
3) ___% reduction total population of under 5 children that are under weight (Weight/Age) in participating communities	36%	N/A	33%	N/A	29%					
Monitoring Outputs										
4) Nutrition Activists are trained/working in each district						0	12	14	16	N/A
5) Village Food Security Committees are trained and using the "3A" approach to community problem-solving						0	15	30	40	N/A
6) Nutrition Volunteer Groups are supporting NA's						0	15	30	40	N/A
7) Use of IEC Materials in ___% of target communities						0%	N/A	40%	N/A	80%
8) ___ minutes per month on local radio are transmitted about nutrition, health and food security						0	5	5	5	5
9) Nutrition methods are transmitted by non-formal comm-ation in ___% of target communities at mid-term, ___% at end						0%	N/A	40%	N/A	80%

Note Baseline Values Are Actual, Taken From Baseline Survey and Secondary-Source Data-Gathering, Conducted June - September 1997

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Page 2	Indicator Type									
	Impact					Monitoring				
	FY 1997 Baseline	FY 1998 Year 2	FY 1999 Year 3 Mid-Term	FY 2000 Year 4	FY 2001 Year 5 End-Line	FY 1997 Baseline	FY 1998 Year 2	FY 1999 Year 3 Mid-Term	FY 2000 Year 4	FY 2001 Year 5 End-Line
Component And Indicator Narrative Description										
Oils Promotion Component Cont.										
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16) Per Cent of Borrowers that pay off their loans on time						N/A	70%	85%	90%	90%
17) 30 repair artisans trained and offering repair services						0	10	0	10	10
18) 300 sales agents trained in oil seed, press and spare parts sales						0	90	150	240	300
19) _____ liters of oil produced by oil presses						2,650	21,250	102,000	324,000	555,000
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Monitoring Outputs										
4) Nutrition Activists are trained/working in each district						0	12	14	16	N/A
5) Village Food Security Committees are trained and using the "3A" approach to community problem-solving						0	15	30	40	N/A
6) Nutrition Volunteer Groups are supporting NA's						0	15	30	40	N/A
7) Use of IEC Materials in ___% of target communities						0%	N/A	40%	N/A	80%
8) ___ minutes per month on local radio are transmitted about nutrition, health and food security.						0	5	5	5	5
9) Nutrition methods are transmitted by non-formal communication in ___% of target communities at mid-term, ___% at end						0%	N/A	40%	N/A	80%

Note Baseline Values Are Actual, Taken From Baseline Survey and Secondary-Source Data-Gathering, Conducted June - September 1997

1997

Page 3 Component And Indicator Narrative Description	Indicator Type									
	Impact					Monitoring				
	FY 1997 Baseline	FY 1998 Year 2	FY 1999 Year 3 Mid-Term	FY 2000 Year 4	FY 2001 Year 5 End-Line	FY 1997 Baseline	FY 1998 Year 2	FY 1999 Year 3 Mid-Term	FY 2000 Year 4	FY 2001 Year 5 End-Line
Household Nutrition Component Cont.										
Impact Outputs										
Diarrhea										
10) ___% of mothers know when to seek treatment for diarrhea based on ability to identify at least 2 warning signs	45%	N/A	60%	N/A	75%					
11) ___% of mothers give ORS or recommended home fluids for management of diarrhea/dehydration	38%	N/A	50%	N/A	60%					
12) ___% of mothers give the same amount or more of food (including breast milk) during diarrhea episodes	33%	N/A	43%	N/A	53%					
13) ___% of mothers give supplemental fluids to children during diarrhea episodes	30%	N/A	40%	N/A	50%					
14) ___% mothers give increased food or a calorie-rich food to children after diarrhea episodes	51%	N/A	60%	N/A	70%					
General Nutrition										
15) ___% of mothers know two benefits of an adequate oil consumption	20%	N/A	35%	N/A	50%					
16) ___% of households in the target areas consume locally-processed oil 1/week as measured during oil seed harvest	0%	N/A	20%	N/A	50%					
17) ___% of households consume vegetable oil once/day	18%	N/A	30%	N/A	40%					
18) ___% of mothers know at least two foods from within each of the three principal food groups	8%	N/A	30%	N/A	50%					
19) ___% of households consume at least one protein-rich food each day	55%	N/A	62%	N/A	70%					
20) ___% of households consume at least one Vitamin-A rich food each day	37%	N/A	43%	N/A	50%					
21) ___% of mothers that give supplemental feeding to underweight children	16%	N/A	25%	N/A	40%					
22) ___% of mothers that add oil to the food of underweight children	15%	N/A	25%	N/A	40%					
23) ___% of mothers that give food protein-rich foods to underweight children	42%	N/A	50%	N/A	60%					
BreastFeeding										
24) ___% of children under 4 months that receive no food or liquid other than breast milk	35%	N/A	40%	N/A	50%					
25) ___% of mothers within the target communities that breast feed within the first hour after birth	48%	N/A	55%	N/A	65%					

Note Baseline Values Are Actual, Taken From Baseline Survey and Secondary-Source Data-Gathering, Conducted June - September 1997

**Africare/Mozambique
Manica Oil Seed Food Security Initiative
Narrative Description of Indicators**

Oils Promotion Component (Baseline values derived from household survey analysis and direct field observations and research):

- 1) Average household income within the target areas increases ___% as measured by income proxies**

Income data was collected during the household survey, including proxy information as defined by Michigan State University's Food Security Project. A separate module designed by MSU was inserted into Africare's questionnaire. The data from this module has been given to MSU for analysis. Estimates of household income for 1997 for Africare's project area will be provided by MSU, determined by applying statistical variables developed from their research in other parts of Mozambique. This information will be provided by MSU at the end of CY'97, and will be included in Africare's FY'97 Annual Results Report, to be submitted in January 1998. Mid-term and End-line estimates of household income will be collected via proxy information included in the questionnaire. During 1998, Africare will participate in a collaborative research activity with MSU and the other PVO's implementing Title II activities to conduct a series of repeat household interviews that will determine the statistical relationship between different proxies and household income, specific to Africare's implementation area. This will be the basis for the measurement of household income in 1999 (mid-term) and 2001 (end-line). Baseline value will be presented in USD terms. Mid-Term and End-Line targets will be presented in absolute terms, with a percentage target increase over the baseline for each target.

- 2) Average cash income from oil seed production increases by \$46 per HH for sesame and \$97 per HH for sunflower**

Baseline calculation: 3,948 families (8% of total per survey) planted 463 HA's of sesame, harvested an average 350Kg's/HA and received an average \$0.35/KG. 494 families (1% of total per survey) planted 70 HA's of sunflower, harvested an average 500 KG's/HA and received an average \$0.17/KG. At the end of the activity, it is assumed that at least 20% of the target population in the target area will be growing oil seed (10,000 HH's). The price of sunflower increases to \$0.22/KG, sesame remains the same.

- 3) Per cent of participating households that receive cash income from the sale of oil seed.**

An overall increase of 18% during the life of the activity, with the largest annual increase in years 2 and 3, dropping off due to saturation at the end of the implementation period (Baseline calculated from survey)

- 4) **Average cash income (gross profit) from oil seed processing increases \$2,228 per participating household.**

Baseline value has been calculated from regular monitoring by Africare staff of the twenty-five presses that were in operation through the end of FY'97. Each press produced an average 2.5 liters/day for an average of 43 days pressing and received an average price of \$1.60/liter. Annual targets are based on projected number of new press enterprises to be established, number of liters to be produced/press/year and assumes an improved efficiency of the operators (more liters produced per day and more oil/KG's of expressed seed). All oil that is produced is assumed sold. Baseline value is presented in USD terms. Annual targets are presented in absolute terms.

- 5) **Oil seed production (HA's planted) within the target areas increases by 500 HA's for sesame and 5,700 HA's for sunflower.**

Baseline value for hectares planted of sesame included in the data analysis (463 HA's) is feasible. However, regular field reconnaissance by Africare staff during FY'97 concluded that the number of HA's planted for sunflower included in the data analysis (2,193 HA's) is not accurate. A more realistic estimate, based on field observations and the amount of oil seed that has been harvested in the target area, is included. (No oil seed was planted during FY 1997 with Africare support). Significant increases in planting area in years two and three will be the result of intensive oil seed production outreach and extension supported by Africare.

- 6) **75% of village-based presses will have been operating for more than two years.**

It is expected that 75% of the presses sold during the first two years will be in minimal operating condition at the end of that period, given recent experience with other ram press projects in Mozambique and southern Africa. However, as there is (expected) increased competition in the more accessible areas with the commercial refining sector, some of these village presses will close or greatly reduce their pressing. The Yr 3 target is 75% of Yr 1 press sales, the Yr 4 target is 75% of Yrs 1&2 sales, the Yr 5 target is 75% of Yrs 1,2 & 3 sales.

- 7) **A minimum of 400 field demonstrations of oil seeds and processing techniques are completed.**

Over time, the necessity for field demonstrations will decrease as the oil press becomes a recognized technology and receives unofficial promotion (including radio). (Baseline taken from demonstrations completed).

- 8) **Collaborative partnerships established in 100% of target communities to promote oil seed production and sale.**

Partner organizations (private sector, government and other development agencies) will assume a larger responsibility for the promotion of oil seed husbandry, processing technology and other needed inputs and support services.

9) _____ **KG's of oil seed harvested per year in the target areas.**

Baseline value is calculated for sunflower (70 HA's x 500 KG's/HA, per field observations) and for sesame (463 HA's x 350 KG's/HA per survey and field observations). Annual targets correspond with expected increases in amount of land to be planted with oil seed.

10) _____ **farmers planting oil seed per year in the target areas.**

Baseline value is calculated from number of households that planted (per survey)
Annual targets are based on projected amount of seed and available hectares to be planted. It is assumed that while the number of farmers that plant oil seed will increase during the life of the activity, more important will be the increase in the amount of land planted per farmer and the (expected) increased yield each farmer receives

11) _____ **KG's of planting seed sold and/or planted in the target areas.**

Little seed was sold in FY 1997 other than what was sold from farmer to farmer. No seed was distributed by any institution during this period. Targets for seed sold and planted are separated because most farmers retain seed for future planting. Baseline is calculated from the estimated hectares that were planted

12) **370 oil seed presses sold in the target areas.**

Baseline represents actual sales through the end of the FY 1997. Two presses that were sold by the end of FY'97 had not begun pressing operations. Annual targets are based on identified potential for increased planting and available crushing seed

13) **100% of retail sales of oil seeds, presses and spare parts made by commercial agents in the target areas.**

By the end of the activity, Africare will have completely withdrawn from facilitating the commercial supply of critical inputs for oil seed production and processing

14) **Commercial entities are multiplying and selling 100% of the planting seed.**

Preparations have begun to identify other agencies from the private sector and the government that will eventually assume all multiplication, maintenance and marketing of planting seed in the province

15) **70% of presses sold by Africare are sold with credit.**

Credit for press purchase will be given directly by Africare on a limited basis during years 1 and 2 (including a "lease-purchase" option). The objective will be to have all press sales to take place by retailers starting in Yr 3 (who will receive the presses "on consignment" from Africare or will purchase them directly from local manufacturers). Credit could be offered by these retailers to potential press owners

16) Per cent of Borrowers that pay off their loans on time.

It is expected that most, if not all, press owners that receive a press on credit will pay off their loan. Experience with similar projects indicates that most press owners are able to pay off their loans within three months. Starting in Yr 3, all credit would be managed by the private sector.

17) 30 repair artisans trained and offering repair services

If a thorough maintenance training is provided to the press owner, experience has shown that major repair needs are minimal. The number of repair artisans to be trained during the five years will be sufficient to provide coverage throughout the five target districts.

18) 300 sales agents trained in oil seed, press and spare parts sales.

An important activity will be to increase knowledge and understanding of this technology, so it will be disseminated throughout the target areas. Potential sales agents include, press owners, repair artisans, rural store owners & employees and small-scale traders (both fixed and ambulatory).

19) _____ liters of oil produced by oil presses.

Baseline value is derived from the number of presses in operation at the end of the fiscal year. Annual targets are derived from the number of presses to be in operation, the expected increase in available crushing seed and the average number of liters produced by each press during each pressing season.

20) Oil seed extension services provided to __% of target households.

Extension services about oil seed will be provided to at least 10,000 households (20% of targeted HH's) by the end of the activity. These services will be provided by other agencies, in addition to Africare's own outreach personnel.

Household Nutrition Component (Baseline values derived from household survey analysis and field observation):

1) % reduction in stunting in children under 5 years of age

The <-2 Z-score cut-off point will be used for children 0-5 years of age for comparative reasons. The percentage of stunting for children 2-5 years of age will also be measured since this age group is most affected and is typically monitored.

2) Nutrition Education activities established in __% of target communities

The expansion strategy for the nutrition staff will be to "follow" the establishment of oil promotion activities in target communities. Approximately eighty communities will

receive direct assistance during life of activity. Mid-term and End-line target include those communities that will have a regular Africare staff presence (Nutrition Monitor and/or Activist) Remaining communities would receive nutrition education from partner agencies

3) % reduction in children under 5 years that are underweight (based on weight for age)

This is the indicator used by Ministry of Health Because of its greater simplicity, weight for age is often used as a single indicator for Protein-Energy-Malnutrition However, this indicator does not allow for distinction between stunting and wasting For this reason height for age will also be measured

4) Nutrition Activists are trained/working in each district.

Annual targets are based on expected number of communities to receive direct support from within each district. Larger communities could have two activists It is expected that some activists will work in other communities in future years, in addition to the fielding and training of new activists

5) Village Food Security Committees are trained and using the "3A" Approach to community problem-solving.

These targets identify those communities that will receive direct support and participate in community food security activities It is expected that some of the communities to receive direct support will not form a VFSC, but still participate in some nutrition outreach A maximum of one VFSC would be formed per community

6) Nutrition Volunteer Groups are supporting Nutrition Activists

These targets reflect the establishment of VFSC's, and include individuals (both male and female) that directly support the activists.

7) Use of IEC materials in __% of target communities

The nutrition education curriculum being developed by Africare will be used by nutrition monitors and activists in the target communities and the outreach staff of other agencies (who will receive training in its use) The targets reflect the combination of those communities with a regular Africare presence and others that have another agency's regular presence

8) __ Minutes per month on local radio are transmitted about nutrition, health and food security

Short announcements will be developed and transmitted in local languages about key nutritional concepts

- 9) **Nutrition methods are transmitted by non-formal communication in ___% of target communities at mid-term; ___% at end.**

Africare will use non-formal techniques such as street theatre and story-telling to reinforce the nutritional messages and improved behavior promoted by outreach activities. The targets reflect those communities that participate in these activities at least several times during the year.

- 10) **% of mothers know when to seek treatment for diarrhea based on ability to identify at least 2 warning signs of diarrhea/dehydration**

The purpose of this indicator is to assess the mother's ability to determine the seriousness of her child's diarrhea. The women will be taught to recognize warning signs of dehydration and to seek treatment for their children when appropriate based on this assessment.

- 11) **% of mothers give ORS and/or recommended home fluids to treat diarrhea**
12) **% of mothers give the same amount of food to children during diarrheal episodes**
13) **% of mothers give supplemental fluids to children during diarrheal episodes**
14) **% of mothers give increased food and/or calorie-dense foods to children following diarrheal episodes**

These indicators measure the mother's behavior rather than the child since the child's well-being greatly depends on the mother's actions. It is UNICEF's recommendation that children receive additional fluids including ORS to replace all liquids lost. In addition, children should continue to receive the same amount of food or more during a diarrheal episode and if the child is exclusively breastfed, s/he is breastfed the same amount or more frequently. Immediately following the diarrheal episode, children should be given an extra meal every day to ensure a good recovery. These indicators are used to measure if mothers put into practice program messages about proper management of diarrhea.

- 15) **% of mothers know at least 2 benefits of adequate oil consumption**
16) **% of households consume locally-processed oil at least once per week as measured during the oil seed harvest**
17) **% of households consume vegetable oil at least once a day**

It is assumed that if the mother increases oil in their cooking the child will benefit. Adequate oil consumption allows for adequate utilization of fat soluble vitamins and increases caloric intake for protein sparing effect.

- 18) **% of mothers know at least 2 items of food for each of 3 basic food groups (Energy, Construction, Protection)**

If mothers know which types of foods give energy, help growth and protect their health, they will be more likely to include some of each basic food group in the family's diet.

19) % of households consume at least 1 protein-rich food per day

If the mother includes protein foods, fruits and vegetables in her cooking, her children will also benefit. This indicator is based on a 7-day recall

20) % of households consume a vitamin A-rich food at least once a day

Vitamin A is necessary to prevent xerophthalmia and also improves children's resistance to other illnesses such as diarrhea and measles. It should be a part of children's daily diet. This indicator is measured using a 7-day recall for the entire family and is based on frequency of intake not quantity

21) % of mothers give supplemental feeding to underweight children

22) % of mothers add oil to food of underweight children

All children, especially under 3 years of age, need a small amount of extra fat or oil added to their food to satisfy their high energy needs and for protein sparing. It also ensures adequate intake of essential fatty acids. This is even more important for underweight children who need to catch up on their growth

23) % of mothers give protein-rich foods to underweight children

An adequate supply of protein is necessary to ensure body growth and maintenance

24) % of children under 4 months that receive no food or liquid other than breast milk

The WHO recommendation is for infants to be exclusively breastfed from birth to six months. However, Mozambique's national breastfeeding policy continues to encourage exclusive breastfeeding only up to 4 months. Based on Africare's initial assessment, mothers tend to initiate supplementation early on, most often before 4 months. This indicator is calculated based on 24 hour recall data

25) % mothers that breastfeed within the first hour after birth

The purpose of this indicator is to assess whether mothers initiate breastfeeding immediately after delivery. Early initiation has many benefits both to mother and child because it ensures that the baby receives colostrum, which contains high concentrations of nutrients and antibodies that protect the infant from infection. It also is important for proper bonding, which is essential for growth. This indicator is calculated based on currently breastfed children, to decrease recall bias for older children