Alimentação Escolar Através de Produtos Locais
LPSF
Juntos Educando a Criança

BASELINE SURVEY REPORT

MOZAMBIQUE LOCAL AND REGIONAL FOOD AID PROCUREMENT PROGRAM- LRP

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Prepared by

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Contents

Acronyms

CIP	International Centre of Potatoes
CoP	Chief of Party
DIP	Detailed Implementation Plan
ECT2	Education Children Together Phase 2
FGD	Focus Group Discussion
ICED	International Centre for Evaluation and Development
INE	Instituto Nacional de Estatística
FFE	Food for Education
ITSH	Internal Transportation, Storage & Handling
KPI	Key Performance Indicator
LPSF	Locally Procured School Feeding
LRP	Local and Regional Food Aid Procurement
MASA	Ministry of Agriculture and Food Security
MINEDH	Ministry of Education
MISAU	Ministry of Health
M&E	Monitoring and Evaluation
MZM	Mozambique Currency
PDM	Post Distribution Monitoring
PMP	Performance Monitoring Plan
PRONAE	National School feeding program of the Government of Mozambique
SPC	School Procurement Committee
SDSMAS	Serviço Distrital de Saúde Mulher e Acção Social
ToT	Trainer of Trainers
USD	United States Dollar
USDA	United States Department of Agriculture
WV	World Vision

Executive summary

The United States Department of Agriculture (USDA) has provided funding for a Local and Regional Food Aid Procurement Program (LRP) in Mozambique for implementation from May 2017 to February 2019 in 43 schools in two districts of the Nampula Province. The project is being implemented by World Vision Inc through World vision Mozambique (WVM) to substantially improve students' nutrition in the target schools. The goal is to improve the efficacy and sustainability of the larger ongoing McGovern-Dole ECT2 school feeding program in Mozambique through the procurement of locally produced food commodities.

The project's intended results are to increase capacity of schools and the Government to effectively and efficiently procure local commodities to supply school feeding programs, promote the sustainability of school feeding, strengthen farmer groups' ability to provide high-quality nutritious commodities and improve the nutrition of students in the target districts of Muecate and Nacarôa. World Vision is of the view that if farmer groups provide locally produced, high quality, nutritious commodities that are delivered to schools through effective school procurement committees, the school feeding programme will be effective and sustainable, as well as improve the nutritional status of the targeted school children.

It is against this background that World Vision commissioned an independent baseline survey in January–February 2018 to find the current levels of some related indicators and also address the following questions:

- What is the capacity of the farmer groups to produce high quality, nutritious commodities, especially orange-fleshed sweet potato (OFSP), and supply them to the school-feeding program?
- What level of capacity do the schools and the government departments have to procure and manage local commodities to supply the school feeding program?
- To what extent can locally procured, good quality and culturally appropriate food commodities help to improve the nutrition of students in the target schools?

Purpose of the baseline study

The purpose of the baseline study was to establish benchmarks for indicators against which the project's success would be measured. Specifically, the study aimed to:

- Determine the relevant indicator measurements required to answer the key baseline questions;
- Determine the current values of the relevant outcome indicators to measure program performance as well as to answer the key baseline questions;
- Collect data for analytical comparison with the final program evaluation data to determine the degree of change in output and outcome indicators;
- Help establish or validate annual and end of project targets for the program indicators.

The Local and Regional Food Aid Procurement Program (LRP) baseline survey was based on the total number of the schools participating in the ETC2 program and LRP. A total of 160 schools in two districts are involved. Out of these 43 schools are participating in LRP. These schools are classified in this baseline survey as the treatment schools and the remaining 117 as the control schools. Some 50 schools were randomly selected for the survey, 20 from the treatment group and 30 from the control group.

It should be noted that a number of the LRP interventions had started before the baseline which was delayed because of initial problems in finding a suitable consultant for the survey.

Findings

The main findings of the study are summarized according to the research questions, as follows:

To what extent can locally procured, good quality and culturally appropriate food commodities help to improve the nutrition of students in the target schools?

- More students in the treatment schools had two meals per day (288) than in the control schools (228), which benefitted from only the ETC2 programme. The same trend applied to students who had three meals a day, with fewer children coming from the control schools (93) than the treatment schools (104).
- The students in both programs had balanced meals that included food products from all the food groups. In the Nacaroa control schools this trend was less evident than in the other three areas (Nacaroa and Muecate treatment schools and Muecate control schools), where more than 75% of the students interviewed reported eating from the four food groups. Three food groups that included sweet potato, vegetables and fruits was consumed by the least number of students.
- Limited numbers of students reported being sick in the previous month before the baseline. The students in the two districts did not have many health complaints and only about 28% of them reported to have fallen ill once in the previous month, the highest level for illness shown in the survey

What is the capacity of the farmer groups to produce high quality, nutritious commodities, especially orange-fleshed sweet potato (OFSP), and supply them to the school-feeding program?

- Farmers had been trained in business skills and agricultural techniques by the LRP project before the baseline.
- OFSP had been introduced to 40% of the farmer associations at the time of the baseline.
- Only 10% of the farmer associations were supplying OFSP to schools as at the time of the baseline. However, more than 50% of the procurement committees in the Muecate district confirmed that they received food products from farmer associations.
- World Vision vehicles and human porters were the most common means of transporting food supplies to the schools
- Farmer association had some experience in commercial or contractual business relationships.

What level of capacity do the schools and the government departments have to procure and manage local commodities to supply the school feeding program?

- School Procurement Committees had been trained in storage quality and future contracts by the LRP project at the time of the baseline.
- School Procurement Committees were present in only the treatment schools at the time of the baseline
- Some school procurement committee members had trainings from other NGOs, government departments and other workshops as at the time of the baseline
- Some 69% of the treatment school committees reported that their quality control method for the food products was visual assessment, 62.5% controlled their stores of the products by referring to the delivery notes, while 43.8% did so using a product

inventory. The quality control procedures were not implemented in the control schools in either district.

Limitations of the study

The main limitation of the survey is that it was carried out late during the first year of the project, therefore, the data being provided for the outcome indicator are not that of “before the project, but after some activities had already taken place in the treatment schools. The assumption being made is that the control schools will serve as a comparison baseline for the treatment schools.

Also the timing of the survey was at the beginning of the academic year, therefore it was difficult to find the respondents, and some information that should have been very recent was obtained from the previous school semester.

Again, the period of the baseline study was associated with the unfavourable weather conditions that hit the Nampula province before the survey and made access to the schools difficult, since the distance between the schools was long and the logistic resources available were limited. Some schools were impossible to reach owing to the damaging of bridges and had to be replaced, a situation that overstretched the limited resources

This report presents quantitative and qualitative data supporting the observations.

Indicators

Outcomes	Outcome indicators Assessed	Baseline	
		Control	Treatment
Improved effectiveness and sustainability of school feeding through local procurement	Percentage of farmer groups with partnerships with schools	55.3	44.6
Strengthen farmer groups' ability to provide high quality commodities and connect them to school feeding programme	Average volume of commodities sold by farmers (Kgs)	0	95
	Average value of commodities sold by farmers before project (MTn)	0	2250
Increased agricultural productivity of farmer groups	Percentage of farmers with training in agricultural productivity	34	38
	Percentage of farmers trained in business skills	38	61.5
	Percentage of farmer group leaders trained in produce storage and handling	10	31
Increased capacity of farmer groups to fulfil procurement contracts	Percentage of farmers engaged in food supply contracts	0	8.5
	Percentage of farmer group leaders with training in procurement contracting	40	59.2
Increased capacity of schools and the government to procure local commodities to supply school feeding programmes in the long term	Percentage of schools involved in procurement of local commodities for school feeding	0	43.5
	Percentage of government officials involved in local commodities procurement for school feeding	NA	NA
Increased skills and knowledge of school management in food quality control and stock control	Percentage of school management committee members with knowledge in food quality and stock control	0	37.5
Increased skills and knowledge of school management in forward contracts	Percentage of school management committee members with training in forward contracts	0	37.5
Improved nutrition of students by utilizing various, good quality and culturally appropriate foods	Average number of daily meals consumed by households – children	2	2
Improved access to nutritious foods	Percentage of children consuming at least 3–7 food groups	55.8	44
Increased skills and knowledge on nutritious food preparation	Percentage of cooks trained in nutritious food preparation	49	33

1. Introduction

1.1 Background

In 2017, World Vision received a two-year grant covering May 8, 2017 to February 28, 2019 from the United States Department of Agriculture (USDA) to implement the Local and Regional Food Aid Procurement Project (LRP) in Mozambique. The goal was to improve student nutrition and the efficacy and sustainability of USDA's ongoing McGovern-Dole ECT2 school feeding program in the country through providing students locally grown and procured food commodities. The LRP project aims to obtain dry beans, groundnuts and orange-flesh sweet potato (OFSP), plus iodized salt, from local suppliers to provide to 43 schools in the Muecate and Nacaroa districts. Procuring foods locally will strengthen the local market supply as well as suppliers' capacity to provide high quality food to schools. This approach is in line with the government's school feeding policy and will complement its efforts in addressing nutritional deficiencies, especially vitamin A and iron deficiencies among children.

To provide the food, World Vision planned to work with local suppliers to procure approximately 120 MTof beans, 253 MT of groundnuts and 42 MT of salt. The project also planned to work with local farmer groups already connected to the selected schools to procure 230 MT of OFSP through a forward contracting mechanism. These farmer groups received training to improve the yield and quality of their commodities and their business skills. The overall objective was to improve the effectiveness and sustainability of the school feeding program through local procurement of food. The main intermediate results were to strengthen farmer groups' ability to provide high quality, nutritious commodities and connect them to school feeding programmes; increase the capacity of schools and the government to procure local commodities to supply the school feeding programs in the long term and improve the nutrition of students by utilizing various good quality and culturally appropriate foods.

World Vision commissioned this baseline study on the LRP project with the objective of establishing benchmark performance indicators against which the project's effectiveness would be measured.

1.2 Mozambique's Socioeconomic Situation

Mozambique is a low income, food deficit country, which in 2016 was ranked 181 out of 188 countries in the human development index and 104 out of 188 in the global hunger index. According to INE 2017, the country has a large and growing population of 28 million. Some 80% of its people cannot afford an adequate diet and 46% in that group live below the poverty line.[1] The country has demonstrated significant commitment to improve the health status of the population, and government spending on health services has increased. However, according to INE and ICF International (2013), the prevalence of stunting, which is associated with chronic malnutrition, has increased to 46% and is considered severe.

Although most of the agricultural production takes place in the northern and central provinces, the northern provinces are more severely affected by chronic food insecurity and, thus, stunting. In Nampula the chronic malnutrition level is 55%, anaemia affects 70% of the children under 5 years of age and 55% of the women in the reproductive age, and vitamin A deficiency affects 68% of the children aged 6–12 years.

The country has registered good progress towards Sustainable Development Goal 1 on ending poverty in all its forms but needs to make more progress towards the targets of Sustainable Development Goal 2, which focuses on access to food, food insecurity, chronic

[1] 2014 World Bank development indicators

malnutrition and smallholder productivity. To achieve those results the following challenges need to be addressed:

- Government institutions suffer from insufficient program implementation capacity, shortage of qualified staff, and resource limitations, all of which affect nutrition and food security programs, particularly at the provincial and district levels.

- The national emergency preparedness and response capacities are insufficient to address the frequent climate shocks, despite the progress made over recent years.

- The multisectoral coordination between the government and partners on food security and nutrition is fragmented, preventing consistency in programming and limiting consideration of regional differences;

- Access to markets and sustainable food systems is limited, constraining the commercialization of the food produced by smallholder farmers.

1.3 The study area

In 2017 Mozambique had 20,076 primary schools which includes 12,522 EP1 schools (grade 1-5) and 7,554 EP2 schools (grades 6-7)[2]. There were 5,101,521 pupils enrolled in EP1 and 922,110 in EP2[3]. The ratio of teacher to students was 1:59[4] and the average number of pupils per class was 50.9. The average national literacy rate in 2014/2015 was 44.9%, while in the Nampula province it was 56%.

The study covered two districts in Nampula province, i.e. Muecate and Nacaroa. Muecate district has an area of 4,154 km^2 and a population of 107,614, and Nacaroa, whose area is 2,749 km^2, has a population of 119,893 (INE, 2013). [5]

The two districts have a total of 160 schools and the World Vision program serves all of them. In 2017 Muecate had 83 schools out of which 36 were EP1 schools and 47 were EPCs (complete primary schools) and Nacaroa had 77 schools, out of which 38 were EP1 schools and 39 were EPCs.[6]

There were 46 farmer associations in the study area, 24 in Muecate and 22 in Nacaroa. The associations had about 1,100 farmers, and average 5–10 members. They produced a variety of five or more products.

Muecate district had 21,593 small and medium-size farms occupying an area of 30,676 m^2 and constituting 3% of the farms in the province (INE, 2013). Nacaroa had 23,877 small and medium-size farms cultivating an area of 30,681 m^2 or 3% of the cultivated area in the province.

1.4 The National School Feeding Programme

The Government of Mozambique in 2010 entered into a tripartite agreement with the Brazilian Cooperation Agency and the World Food Program to develop the National School Feeding

[2] Annual survey general education public schools –2017 MINED

[3] Enrolment by level of education -Day and night shifts – 2017 MINED

[4] Global Partnership for Education 2015

[5] INE Estatisticas do Distrito 2013

[6] Information form World Vision

Programme (PRONAE). This program now benefits from the support of other partners and is being implemented in two phases. The pilot's project phase 1 targeted primary schools in Cahora Bassa and Changara in Tete province. Pilot 2 is targeting the provinces of Gaza, Manica, Tete and Nampula.

World Vision is one of the stakeholders in PRONAE. It has been implementing a program to substantially improve students' nutrition and the efficacy and sustainability of the ongoing McGovern-Dole ECT2 school feeding program in Mozambique through providing the schools with locally grown and procured food commodities. World Vision's LPR project procures dry beans, groundnuts and OFSP, plus iodized salt, from local suppliers to supply 43 schools in Muecate and Nacaroa districts of Nampula. The aim is to achieve the objective of improved effectiveness and sustainability of school feeding through local procurement. The following are the expected intermediate results:

- Strengthen farmer groups' ability to provide high quality, nutritious commodities and connect them to school feeding programmes;
- Increase capacity of schools and the government to procure local commodities to supply school feeding programmes in the long term;
- Improve nutrition of students by utilizing various good quality and culturally appropriate foods.

1.5 Purpose of the Survey

The overall purpose of the baseline survey and market assessment in Muecate and Nacaroa districts was to collect baseline data to establish benchmarks for the LRP project's performance indicators against which its success would be measured. Furthermore, the data generated on the various outcome indicators would serve to inform the World Vision management and partners on the reference situation in the intervention areas.

The baseline survey was meant to answer the following research questions:

- What is the capacity of the farmer groups to produce high quality, nutritious commodities, especially OFSP, and supply them to the school feeding programme?
- What level of capacity do the schools and the government departments have to procure and manage local commodities to supply the school feeding programme?
- To what extent can locally procured good quality and culturally appropriate food commodities help to improve nutrition of students in target schools?

The results from the study were expected to be used to:

- Assist in setting appropriate short-term outcome and performance targets for future assessment of the effectiveness of interventions;
- Inform the strategic decisions on the design and implementation of these interventions.

Specifically, the baseline survey was meant to serve the following purposes:

- Determine the relevant short-term outcome indicator measurements required to answer the key baseline questions;
- Determine the current values of the relevant outcome indicators to measure program performance as well as answer the key baseline questions;
- Collect data for comparison with the final evaluation data to determine the degree of change in the output and outcome indicators;
- Help establish/validate annual and end of project targets for the program indicators.

2. Methodology

The baseline study used a mixed-methods approach that included a desktop review and collection of quantitative and qualitative data. The consultant conducted structured

questionnaire interviews with teachers, students, government officials and food commodities wholesalers and transporters. Focus group discussions were held with farmers, community volunteers, procurement committees and school management committees.

The market assessment focused on community markets and trade fairs, mostly markets located near the schools selected. It collected data to help determine:

- The number of farmers producing beans, groundnuts and OFSP;
- The production quantities for each crop;
- The quantities of the crops consumed by farmers or sold in the markets, in which markets they were sold and at what price;
- The quality of the products and the production chain components for those products for their input, planting, harvesting, storage and distribution processes;
- The number of intermediaries involved in the distribution of the commodities and the prices paid for the crops by these intermediaries.

2.1 Sampling Strategy

The baseline survey used probability and non-probability sampling methods. Probability sampling consisted of randomly selecting both the control and the treatment schools, the students, the teachers and the school administrative staff to be interviewed. A simple random sampling strategy was used, involving considering the universe of all the 160 schools in the treatment and control areas, then the number of students and teachers and sampling them.

Since the ECT2 program had 43 schools in the LRP project in the treatment area and 117 schools in the control area, a simple random sampling method was used to select a number of schools within the treatment and the control groups. From the selected sample of the treatment and control schools the consultant randomly selected from each school students, teachers (from grade 1 to 3), volunteer cooks and officials. The appropriate sample sizes for students, teachers, school administrators, volunteer and cooks were determined after the listing.

To select the key informants such as district and provincial government officials from the Ministry of Education, Agriculture and Health to be interviewed on their role and contribution to the program, the consultant used a non-probability, purposive sampling approach, which involves choosing respondents based on the fact that they are likely to give the best information on the intervention.

2.1.1 Sample size determination

After an assessment of the universe of the study using the latest project data, the consultant determined the sample size for the study using as the key assumptions the following parameters:

- A significance level of 0.05;
- A cluster size (i.e. number of farmers) of 10.

A sample of 50 schools (Tables 1 & 2) was selected from the 160 schools, which was regarded as a statistically acceptable size considering the time allowed for the survey and the resources with the resultant numbers as follows:

- Total number of schools = 160
- Total number schools for the treatment = 43
- Total number of schools for the control = 117
- Number of schools selected = 50
- 20 schools selected in the treatment group
- 30 schools selected in the control group
- Number of students per class per school = 15

- Number of teachers selected per school = 2
- Number of cooks' focus group discussions = 50
- Number of school committees = 50

Table 1: Schools selected in Muecate district

ETC2 Control Schools	LRP Treatment schools
Nchancha	Namina
Nantica	Nacotho
Tipane	Minicane
Nacopa	Mucocola
Mucone	Chipacane
Nanvuca	Mutuala
Nametil	Carimela
Nalikue	Ampuaia
Imala	25 de Setembro
Terrene	Namicoio
Sapala	
Lapa	
Mathe	
Mucorro	
Minheuene	

Table 2: Schools selected in Nacaroa district

ETC2 control schools	LRP treatment group
EP1 de Naphela	EPC Mucuthy
EP1 de Muatelene	EPC de Cothocuane
EPC de Muchelia	EPC de Munana
EP1 de Nahavara	EP1 de Muhiene
EPC de Novane	EP1 de Mulapane
EPC de Eduardo Mondlane	EPC de Inteta
EP1 de Namacozi	EPC de Nachere
EP1 de Cascone	EPC de Nacuala
EP1 de Camaculo	EPC de Mecuburi-chico
EP1 de Savane	EPC de Querramuaha
EP1 de Namachilo	EPC Tabuane
EP1 de Trapassa	
EPC de Munania	
EP1 de Metulula	

We included all the farmer associations in the two districts under the LRP since the project was working with all of them. In each association we selected five to eight farmers to participate in the focus group discussions.

2.1.2 Methodological guidelines for the qualitative research

The qualitative approach was incorporated into the baseline study to complement the quantitative data and provide granular information, allowing for examination of nuances, for example the social analysis of gender and age-group-specific deficiencies and related needs, and other relevant issues that emerged from the quantitative data. The qualitative approach was used also to improve understanding about the economic, social and institutional patterns that supported or constrained the possible economic and social impact of the intervention.

The qualitative study combined focus group discussions with in-depth key informant interviews. The key informants interviewed included local government, regional and local officials working on food security. The focus groups included groups of farmers, volunteer cooks, procurement committees and school management committees.

2.2 Survey Design

The analysis combined data collected using the quantitative and the qualitative survey instruments developed by the consultant team. The enumerators were trained after the inception and translation of the instruments. The quantitative survey used a structured questionnaire to interview the selected students, teachers, school officials, traders and transporters.

2.2.1 Chosen indicators

Normally in a school feeding program the key indicator of reference is the net enrolment, but the LRP design monitoring and evaluation plan did not list this item as an indicator. Therefore we relied on the World Vision indicators shared with us that had been classified under the various outcomes. Depending on the current level of the indicator and the foreseen desired level of change, the number of respondents required to reveal such a change varied. The sample size was inversely related to the size of the change that the survey intended to capture. The key outcome indicators were:

- Percentage of schools depending solely on locally procured food for school feeding before the LRP project
- Percentage of farmer groups with partnerships with schools before the project
- Volume of commodities sold by farmers before the project
- Value of commodities sold by farmers before the project
- Percentage of farmers with training in agricultural productivity before the project
- Percentage of farmers trained in business skills before the project
- Percentage of farmer group leaders trained in produce storage and handling before the project
- Percentage of farmers engaged in food supply contracts before the project
- Percentage of farmer group leaders with training in procurement contracting before the project
- Percentage of schools involved in procurement of local commodities for school feeding before the project
- Percentage of government officials involved in local commodity procurement for school feeding before the project
- Percentage of school management committee members with knowledge in food quality and stock control before the project
- Percentage of school management committee members with training in forward contracts before the project
- Average number of daily meals consumed by households (children)
- Percentage of children consuming at least 3–7 food groups
- Percentage of cooks trained in nutritious food preparation

2.2.2 Stratification and desegregation of data

The common variable for stratification is geographic location, in this case the treatment and control school district and the community. The data were desegregated by gender, age group and school grade, and they were selected on the basis of the analytic needs of the operation.

2.3 Survey Plan

2.3.1 Personnel management

Personnel management consisted essentially of:

- Hiring, training, supervising and remunerating survey interviewers and supervisors for the quantitative and qualitative surveys. The training lasted three days and provided enumerators with the opportunity to practise administering the survey in a mock setting.
- Ensuring that all the field staff conducted themselves professionally and ethically. Any problem with conduct was immediately addressed and repeat violators were taken out of the team.

2.3.2 Fieldwork and data collection

The International Centre for Evaluation and Development (ICED) team prepared and pretested the data collection tools, trained the enumerators, and coordinated the survey in the two districts. The team conducted a four-day training session for 12 enumerators, focusing on the design of the baseline survey, the sampling strategy and the instruments used for data collection.

The pilot test was conducted in one day in two schools in Muecate district with two teams of six enumerators per school. The instruments were tested with the people found in the schools. The instruments for the markets, procurement committees and cooks were prioritized. There were not many issues with the content of the instruments but many issues were identified in the sequencing of the questions. A feedback session at the end of the day allowed for inputs to be shared with the ICED IT officer that were to be used to fine-tune the questionnaires accordingly. The questionnaires were revised and adjusted as per the feedback.

The field work was undertaken in two phases. The first phase took place 25 January to 2 of February, one week prior to the beginning of the academic year. During that time FGDs were conducted with cooks, school procurement committees, market committees and other stakeholders. The second phase of data collection occurred 5 to 10 February. During that time the survey was conducted among students and teachers, and FGDs were held with school management committees. The number of interviews and FGDs in many cases was lower than the sample size determined (see Table 3). The reasons for those differences were that:

- Not all schools were linked to a farmer group;
- Not all schools had a market nearby;
- Only LRP schools had procurement committees, although not all of them were operational;
- Not all schools had grades 1 to 7; some had only grades 1 to 5.

Table 3: Baseline level response

Instrument	Planned of FGDs or interviews	Actual FGDs or interviews
Farmer associations' FGDs	50	44
Market assessment FGDs	50	11
Procurement committees' FGDs	20	19

Students' interviews	700	683
Teachers' interviews	100	99
Cooks' FGDs	50	50
School management committees' FGDs	50	49

2.3.3 Quality control

Throughout the data collection process, the key consultant and field officer monitored the process to ensure that the interviews were conducted ethically and that the data met the quality standards set by ICED. This was done using the following steps:

- The enumerators used a computer-assisted personal interview (CAPI) setup installed on tablets during interviews. At the end of the day team supervisors were required to review and upload the data to be sent to the CAPI operations team at the ICED head office. The key consultant reviewed the available data and contacted the associated team for clarification and corrections to be made for any issue.
- During the survey period, a field coordinator/supervisor visited the field workers to monitor the data collection process, provide necessary logistics support and address any issues that came up in the field. Field teams reported their progress regularly so that the consultant could ensure that field work schedules were adhered to.

3. Findings

3.1 Students

3.1.1 Student profile

The LRP baseline survey covered the total schools participating in the ECT2 program, in which LRP was a part. Some 160 schools were participating in the program in two districts. Out of these 43 schools were in the LRP project. Those schools were classified in the baseline survey as the treatment schools and the remaining 117 as the control schools. A random selection of 50 schools was made, 20 from the treatment schools and 30 from the control schools.

Fifteen students from each of the classes in the schools were selected by simple random sampling for the structured interview. Two teachers from each of the 50 schools were also selected randomly for the survey sample.

In the two districts and in both the treatment and the control schools, a total of 652 students were interviewed, of whom 50.9% were male and 49.7% were female (Table 4).

Table 4: Student gender disaggregation

		Male	Female	Total
District	Muecate	50.3%	49.7%	314
	Nacaroa	51.5%	48.5%	338
	Total	50.9%	49.1%	652
	Muecate control	50%	50%	182
	Muecate treatment	50.8%	49.2%	132
	Nacaroa control	51.1%	48.9%	182
	Nacaroa treatment	51.9%	48.1%	156

	Total	**50.9%**	**49.1%**	**652**

3.1.2 School enrolment

According to the information provided by teachers on the number of students in each school for the 2017 academic year on average there were 291 students enrolled per school.

The number of students enrolled in each school, reported by the teachers, varied considerably in both districts. In the 2017 academic year 14% of the schools had 201–250 students, 14% had 301–350 students, 11% had 401–450 students and 11% had more than 501 students. In 2017 more students were enrolled in the treatment schools than in the control schools in the same district.

Table 5: Students enrolled in 2017

		Students enrolled in 2017 Total	
		Mean	Median
District	Muecate	312	250
	Nacaroa	271	259
	Total	291	254
Disaggregation Base	Muecate Control	316	249
	Muecate Treatment	318	337
	Nacaroa Control	249	254
	Nacaroa Treatment	295	308
	Total	291	254

For the 2018 academic year, the information provided by the teachers on the average number of students enrolled in each school, was 257 students.

Again, in 2018 the number of students enrolled reported by the teachers varied considerably for both categories in both districts. Some 18% of the schools had 201–250 students, 12% had 101–150 students and 15% had 0–50 students.

Table 6: Student enrolled in 2018

		Students Enrolled 2018 Total	
		Mean	Median
Districts	Muecate	298	229
	Nacaroa	220	195
	Total	257	213
Disaggregation Base	Muecate Control	293	211

	Muecate Treatment	324	315
	Nacaroa Control	160	149
	Nacaroa Treatment	295	213
	Total	257	213

3.1.3 School attendance

In the last semester of 2017 the control schools had lower attendance than the treatment schools. In Muecate district 100% of the treatment schools and 90% of the control schools reported an attendance level of above 80% attendance (Table 7). In Nacaroa district 58% of the schools reported a level of attendance of above 80% and 82.6% of the treatment schools reported a level of attendance of above 80% per class.

Table 7: School attendance during the last trimester of 2017

		0–19	20–39	40–59	60–79	80–100
District	Muecate	0%	0%	0%	6.4%	93.6%
	Nacaroa	13.5%	5.8%	0%	13.5%	67.3%
	Total	7.1%	3.0%	0%	10.1%	79.8%
Disaggregation base	Muecate control	0%	0%	0%	10.3%	89.7%
	Muecate treatment	0%	0%	0%	0%	100%
	Nacaroa control	16.1%	9.7%	0%	16.1%	58.1%
	Nacaroa treatment	8.7%	0%	0%	8.7%	82.6%
	Total	7.1%	3.0%	0%	10.1%	79.8%

3.1.4 Dropout rate

In the last trimester of 2017, some 75.9% of the control schools in Muecate reported a dropout level of less than 19%. For 20% of the schools the dropout rate was less than 35% (Table 8). Some 81% of the treatment schools had dropout level of less than 20%.

In Nacaroa 64% of the control schools had a dropout level of 0–20 students while for 25.8% of the schools the level was 80–100 students, which is very high. In Nacaroa 82.6% of the treatment schools had a dropout level 0–19 students.

Table 8: Student dropout levels in the last trimester of 2017

		Percentage of students who dropped out in the last trimester 2017					
		0–19	20–39	40–59	60–79	80–100	Total
District	Muecate	78.7%	12.8%	0%	2.1%	6.4%	47
	Nacaroa	71.2%	5.8%	3.8%	3.8%	15.4%	52
	Total	74.7%	9.1%	2%	3%	11.1%	99

	Muecate control	75.9%	20.7%	0%	0%	3.4%	29
	Muecate treatment	81.3%	0%	0%	6.3%	12.5%	16
	Nacaroa control	64.5%	3.2%	0%	6.5%	25.8%	31
	Nacaroa treatment	82.6%	8.7%	8.7%	0%	0%	23
	Total	74.7%	9.1%	2%	3%	11.1%	99

3.1.5 Meals per day

About 50% of the total students interviewed had two meals a day at home, that is lunch and dinner. In the control group in Muecate, 65% of the students had two meals a day while 28.6% had three. In the treatment schools in the same district 50% of students had two meals a day while 35% had three.

In Nacaroa, 46% of the students in the control schools had two meals a day at home, that is lunch and dinner, while 43% of students had three. In the treatment schools 50% of the students had three meals a day while 36.5% had two (Table 9).

Table 9: Meals consumed by students at home per day before the LRP programme

		Breakfast, lunch & dinner	Breakfast & lunch	Breakfast & dinner	Lunch & dinner	Dinner	Lunch	Breakfast	Any	Total
District	Muecate	31.2%	1.9%	2.9%	58.9%	1.6%	2.9%	0%	0.6%	314
	Nacaroa	45.3%	1.8%	7.7%	41.7%	1.2%	1.8%	0.3%	0.3%	338
	Total	38.5%	1.8%	5.4%	50%	1.4%	2.3%	0.2%	0.5%	652
Disaggregation base	Muecate control	28.6%	0.5%	0.5%	65.4%	1.6%	2.2%	0%	1.1%	182
	Muecate treatment	34.8%	3.8%	6.1%	50%	1.5%	3.8%	0%	0%	132
	Nacaroa control	41.8%	3.3%	5.5%	46.2%	1.1%	1.6%	0.5%	0%	182
	Nacaroa Treatment	49.4%	0%	10.3%	36.5%	1.3%	1.9%	0%	0.6%	156
	Total	38.5%	1.8%	5.4%	50%	1.4%	2.3%	0.2%	0.5%	652

3.1.6 Food groups taken at home

The survey sought to find out what foods among the four main groups the students ate at home. In group 1 were carbohydrates (maize, sorghum cassava and rice), in group 2 were proteins (beans, meat, fish and eggs), in group 3 were fruits and vegetables (OFSP, fruits and vegetables) and in group 4 were fats and sugars (peanut, sugarcane, oil and coconut). Almost all the students consumed foods in group 1 and only about half ate foods in group 3 (Table 10).

Table 10: Food consumed by students at home

		Maize, sorghum cassava, rice	Beans, meat, fish, eggs	OFSP, fruits, vegetables	Peanut, sugar-cane, oil, coconut	Total
District	Muecate	99.7%	95.9%	70.4%	85.7%	314
	Nacaroa	97%	79.3%	38.5%	62.1%	338
	Total	98.3%	87.3%	53.8%	73.5%	652

Disaggregation Base	Muecate control	100%	98.4%	81.3%	93.4%	182
	Muecate treatment	99.2%	92.4%	55.3%	75%	132
	Nacaroa control	95.6%	66.5%	28%	41.2%	182
	Nacaroa treatment	98.7%	94.2%	50.6%	86.5%	156
	Total	98.3%	87.3%	53.8%	73.5%	652

3.1.6 Program Participation

The feeding program participation by students and staff was very high in all the schools and 90% of the students interviewed were benefiting from the meals served at school (Figure 1).

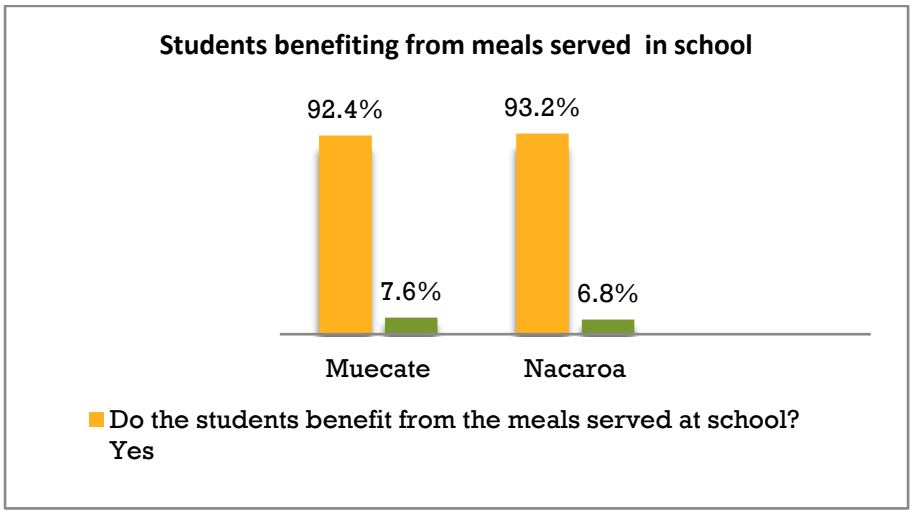

Figure 1: Students benefiting from meals served at school

Although as many as 90% of the students in both the control and treatment groups were participating in school meals, only 55% of them were getting food from the LRP project, which provides beans with peanuts and sweet potato (OFSP) with peanuts. Only 10% of the students in Nacaroa treatment schools were in the LRP project (Table 11).

Table 11: Food provided to students at school

		CSB porridge	Beans	Peanuts	OFSP	Salt	Total
District	Muecate	92.4%	21.3%	21.3%	23.2%	23.2%	314
	Nacaroa	93.2%	5.3%	5.3%	4.4%	8.9%	338
	Total	92.8%	13%	13%	13.5%	15.8%	652
Disaggregation base	Muecate control	92.9%	0.5%	0.5%	0.5%	0.5%	182
	Muecate treatment	91.7%	50%	50%	54.5%	54.5%	132
	Nacaroa control	93.4%	1.1%	1.1%	0%	6.6%	182
	Nacaroa treatment	92.9%	10.3%	10.3%	9.6%	11.5%	156
	Total	92.8%	13%	13%	13.5%	15.8%	652

Most of the students acceded to liking the food served in school. In Nacaroa more than 90% of the students from both the treatment and the control schools reported liking the food (Figure 2). In Muecate 85.6% of the students in the treatment schools and 87% of students in the control schools liked the food.

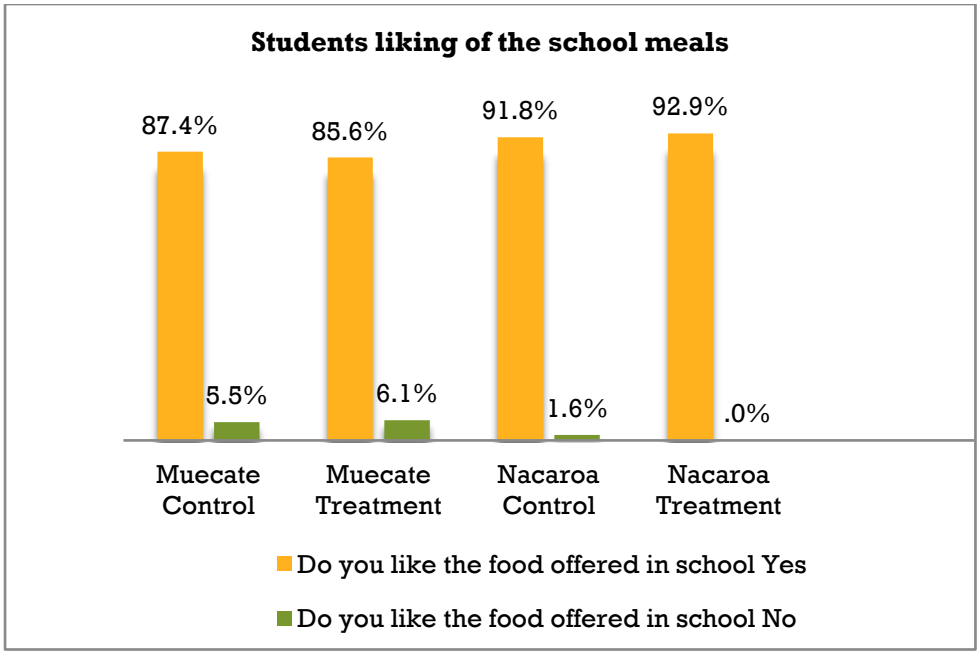

Figure 2: Students' liking of the school meals

The students' reasons for liking the school food were mainly for its taste and quantity (Figure 3).

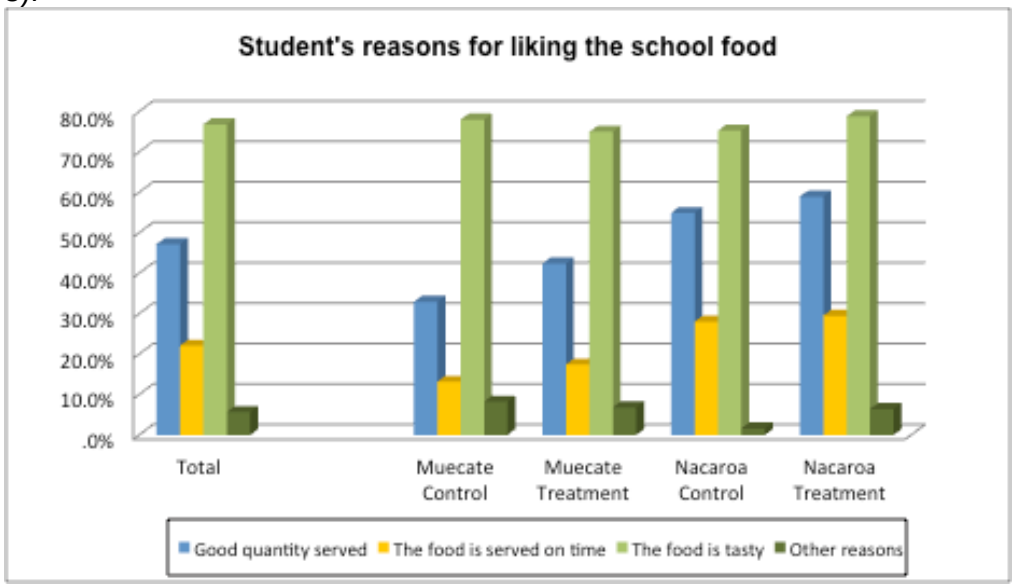

Figure 3: Students' reasons for liking the food provided at school

3.1.7 Students' health

The students in the two districts did not have many health complaints and only about 28% of them reported to have fallen ill once in the previous month, the highest level for illness shown in the survey (Table 10). It seems that the students in the treatment schools had fewer sick days than those in the control schools, especially in Nacaroa (Table 11). Over the two weeks prior to their interviews the students in the treatment schools in Nacaroa had fewer illness incidents (48%) than students in the control schools (58%) (Table 11).

In general, the main illnesses reported by the students were headache (42.7%), cold (23%), malaria (16%) and fever (17%) (see Table 11).

3.1.8 Deworming

In total 78% of the students had been dewormed. A higher percentage (78%) of students were dewormed at school than in hospitals (17%). On average 80% of the teachers in the treatment schools in both districts reported that deworming in their school was conducted by Serviço Distrital de Saude Mulher e Acção Social (SDSMAS). It was noted by 50% of the teachers that deworming took place once a year, while 45% of the teachers said that it occurred once per trimester.

Table 12: Number of times students reported sick in the last semester of 2017

		A week	Once per month	Twice a month	Once per trimester	Twice per trimester	Once per semester	Twice per trimester	Didn't get sick	Once or three times a year	One per 5 times a year	Other	Doesn't know	Total (N)
District	Muecate	2.2%	25.8%	9.6%	3.8%	5.1%	12.1%	6.1%	31.8%	1.6%	1.6%	0.3%	0%	314
	Nacaroa	1.8%	30.2%	11.2%	1.8%	1.8%	7.4%	5.6%	35.2%	4.7%	0%	0%	0.3%	338
	Total	2%	28.1%	10.4%	2.8%	3.4%	9.7%	5.8%	33.6%	3.2%	0.8%	0.2%	0.2%	652
Disaggregation base	Muecate control	2.7%	26.4%	9.9%	2.2%	3.3%	13.7%	7.1%	31.9%	1.1%	1.6%	0%	0%	182
	Muecate treatment	1.5%	25%	9.1%	6.1%	7.6%	9.8%	4.5%	31.8%	2.3%	1.5%	8%	0%	132
	Nacaroa control	3.3%	35.7%	14.3%	1.6%	2.2%	3.8%	3.8%	26.4%	8.2%	0%	0%	0.5%	182
	Nacaroa treatment	0%	23.7%	7.7%	1.9%	1.3%	11.5%	7.7%	45.5%	0.6%	0%	0%	0%	156
	Total	2%	28.1%	10.4%	2.8%	3.4%	9.7%	5.8%	33.6%	3.2%	0.8%	0.2%	0.2%	652

Table 13: Types of illness reported in the previous two weeks

		Stomach pain	Headache	Cold	Cough	Fever	Malaria	Diarrhoea	Total (N)
District	Muecate	6.8%	42.5%	26%	10.3%	13%	17.1%	8.2%	146
	Nacaroa	8.8%	42.9%	20.9%	8.2%	20.9%	14.8%	19.8%	182
	Total	7.9%	42.7%	23.2%	9.1%	17.4%	15.9%	14.6%	328
Disaggregation Base	Muecate control	5%	38.8%	27.5%	8.8%	13.8%	21.3%	8.8%	80
	Muecate treatment	9.1%	47%	24.2%	12.1%	12.1%	12.1%	7.6%	66
	Nacaroa control	3.8%	39.6%	18.9%	4.7%	19.8%	13.2%	22.6%	106
	Nacaroa treatment	15.8%	47.4%	23.7%	13.2%	22.4%	17.1%	15.8%	76
	Total	7.9%	42.7%	23.2%	9.1%	17.4%	15.9%	14.6%	328

Table14: Students' deworming

		Students dewormed in the previous semester			Institution that conducted previous deworming at the school				Frequency of student deworming at school			
		Yes	No	Total	NGO	SDSMAS	Other	Total	Once every 2 years	Once a year	Once per semester	Total
District	Muecate	79.3%	20.7%	314	27.7%	68.1%	0%	47	2.2%	48.9%	48.9%	45
	Nacaroa	78.1%	21.9%	338	21.2%	67.3%	9.6%	52	3.9%	54.9%	41.2%	51
	Total	78.7%	21.3%	652	24.2%	67.7%	5.1%	99	3.1%	52.1%	44.8%	96
Disaggregation base	Muecate control	79.7%	20.3%	182	37.9%	58.6%	0%	29	0%	60.7%	39.3%	28
	Muecate treatment	78.8%	21.2%	132	12.5%	81.3%	0%	16	6.7%	33.3%	60%	15
	Nacaroa control	75.3%	24.7%	182	32.3%	58.1%	6.5%	31	3.3%	50%	46.7%	30
	Nacaroa treatment	81.4%	18.6%	156	4.3%	82.6%	13%	23	4.3%	56.5%	39.1%	23
	Total	78.7%	21.3%	652	24.2%	67.7%	5.1%	99	3.1%	52.1%	44.8%	96

3.2 Teachers

3.2.1 Teachers' profile

A total of 100 randomly selected teachers were interviewed in the two districts with two teachers per school, from grade 1 to grade 3 in both the treatment and the control schools. The composition of the teachers was 39% female and 61% male. Only Nacaroa treatment schools had more female than male teachers (Figure 4). The teachers disaggregated by grade were 34% in grade 1, 37.4% in grade 2 and 28% in grade 3 (Figure 5).

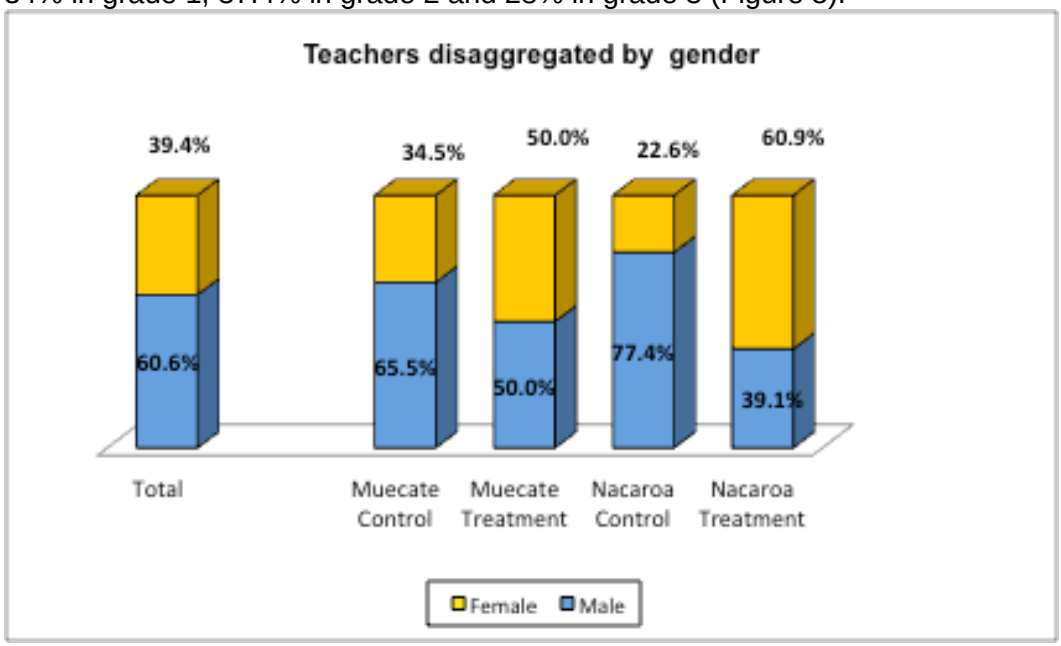

Figure 4: Teachers by gender

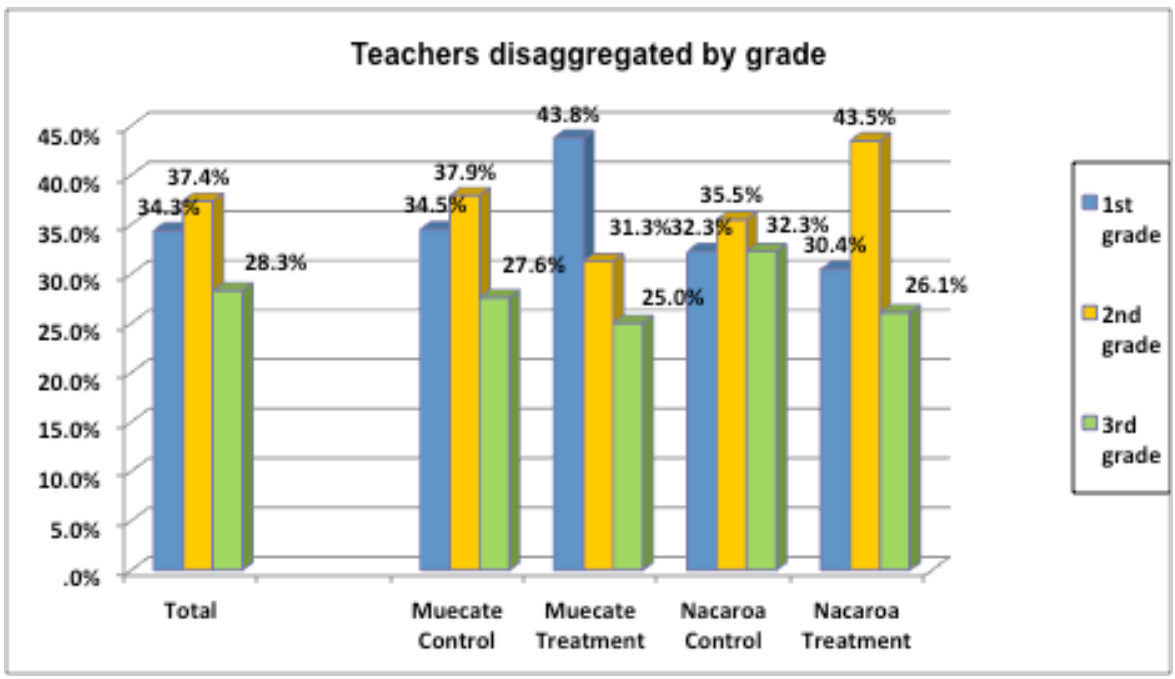

Figure 5: Teachers disaggregated by grade

3.2.2 Teachers' participation in the school meal programme

Almost all the teachers interviewed ate the same food as the students. This was the case for 97% of teachers in both districts (Table 15). Around 90% of the teachers in Nacaroa, 75% of the teachers in the control schools and 81% of the teachers in the treatment schools in Muecate (Table 15) liked the food served in their school.

Table 15: Teachers' participation in the program

		Do teachers eat the same food served to students?			Do teachers like the food provided by the school feeding programme?			
		Yes	**No**	**Total**	**Yes**	**No**	**Didn't answer**	**Total**
District	Muecate	95.7%	4.3%	47	78.7%	17%	4.3%	47
	Nacaroa	98.1%	1.9%	52	96.2%	1.9%	1.9%	52
	Total	97%	3%	99	87.9%	9.1%	3%	99
Disaggregation base	Muecate control	96.6%	3.4%	29	75.9%	20.7%	3.4%	29
	Muecate treatment	93.8%	6.3%	16	81.3%	12.5%	6.3%	16
	Nacaroa control	100%	0%	31	96.8%	3.2%	0%	31
	Nacaroa treatment	95.7%	4.3%	23	95.7%	0%	4.3%	23
	Total	97%	3%	99	87.9%	9.1%	3%	99

The main reason that the teachers gave for liking the food was the taste (91%) followed by the quantity served (60%) (Table 16). The teachers in the control schools gave higher scores for the food qualities than did the teachers in the treatment schools. Of those who did not like the food, 33% attributed that to its taste.

Table 16: Why teachers liked the food provided at school

Why do teachers like the food provided by the feeding project?						
		Good quantity served	**Food served on time**	**Food is tasty**	**Other**	**Total**
District	Muecate	78.4%	27%	86.5%	75.7%	37
	Nacaroa	46%	48%	94%	82%	50
	Total	59.8%	39.1%	90.8%	79.3%	87
Disaggregation base	Muecate control	81.8%	27.3%	95.5%	81.8%	22
	Muecate treatment	69.2%	30.8%	69.2%	69.2%	13
	Nacaroa control	46.7%	50%	96.7%	90%	30
	Nacaroa treatment	50%	40.9%	90.9%	68.2%	22
	Total	59.8%	39.1%	90.8%	79.3%	87

3.2.3 Health knowledge

About 98% of the teachers had basic knowledge about first aid treatment for common illnesses. They also had been trained in nutrition, hygiene and correct food storage procedures. In both districts and for both the treatment and the control schools, 94% of the teachers had received a first aid kit and 45% of them reported to have used it twice in the previous two weeks.

3.3 Management of the Feeding Program

Phase 1 of the school feeding program (ECT1) was implemented from 2013 to 2015, and phase 2, which is ECT2, started in 2016 and is planned to last until 2020. It involves providing CSB, called FUBA, a soya-based porridge, to students. LRP is a new grant to build the capacity of schools and the government to procure local food to improve nutrition and sustainability of the school feeding program in 43 target schools. LRP formalizes the linkage between farmer groups and the 43 schools and includes training of framers in agronomy, contracting and business skills. It also provides the 43 schools with training in procurement, contracting, food storage, local food preparation and food quality control. LRP is managed directly by the following structures:

- The school procurement committee, which is responsible for the food products;
- The school management committee, which oversees the total administration of the school;
- The cooks who prepare the meals. Usually there is one cook for every 100 students.

3.3.1 School Management Committees

The survey interviewed the management committees in both the treatment and the control schools, and 52% of them had an average membership of 5, while 16% had a membership of 6–10.

In the groups as a whole, 83% of the committee members said that the school feeding program had been going on for over five years. This was the view for 78.3% of the Muecate groups and 88% for Nacaroa groups (Table 17). There was no significant statistical difference in the responses from the treatment and the control schools' management committees on how long the school feeding program had run in their districts.

Table 17: Length of time the programme had been implemented in the schools

		1–2 years	2–3 years	3–4 years	5 years+	Total
District	Muecate	0%	4.3%	17.4%	78.3%	23
	Nacaroa	4%	4%	4%	88%	25
	Total	2.1%	4.2%	10.4%	83.3%	48
Disaggregation base	Muecate control	0%	7.7%	7.7%	84.6%	13
	Muecate treatment	0%	0%	30%	70%	10
	Nacaroa control	6.7%	0%	6.7%	86.7%	15
	Nacaroa treatment	0%	10%	0%	90%	10
	Total	2.1%	4.2%	10.4%	83.3%	48

The school management committees were responsible for the provision and administration of the feeding program's facilities for water, storage and cooking. In total 66% of the committee members considered their schools to have water facilities, 85% regarded their schools to have storage facilitates for the food and 83% said that their schools had cooking facilities (Table 18).

There was no significant difference between the treatment and the control schools in Muecate district in terms of the facilities they had, but that was not the case in Nacaroa district. Some 80% of the treatment schools in Nacaroa district had water facilities but this was the case for only 47% of the control schools. In Nacaroa, 80% of the treatment schools and 66% of the control schools had storage facilities and, 80% of the treatment schools had cooking facilities compared with 73% of the control schools.

Table 18: Availability of the facilities required to implement the school feeding programme.

		Water			Storage			Cooking		
		Yes	No	Total (N)	Yes	No	Total (N)	Yes	No	Total (N)
District	Muecate	73.9%	26.1%	23	100%	0%	23	91.3%	8.7%	23
	Nacaroa	60%	40%	25	72%	28%	25	76%	24%	25
	Total	66.7%	33.3%	48	85.4%	14.6%	48	83.3%	16.7%	48
Disaggregation base	Muecate control	84.6%	15.4%	13	100%	0%	13	92.3%	7.7%	13
	Muecate treatment	60%	40%	10	100%	0%	10	90%	10%	10
	Nacaroa control	46.7%	53.3%	15	66.7%	33.3%	15	73.3%	26.7%	15
	Nacaroa treatment	80%	20%	10	80%	20%	10	80%	20%	10
	Total	66.7%	33.3%	48	85.4%	14.6%	48	83.3%	16.7%	48

3.3.2 School Procurement Committees

The procurement committees were responsible for managing the food supplies provided by World Vision. This structure was not present in all the schools but only in the schools implementing the LRP program. Not all the procurement committees had been operational by the time of the baseline survey. Field work reports showed that in Muecate only four treatment schools had operational procurement committees, but they were operational for all the 10 treatment schools in Nacaroa.

No procurement committees existed in the control school areas and the school management committees did not have any procurement knowledge. In the treatment schools 40% of the procurement committee members had some procurement knowledge. In the Nacaroa treatment schools 50% of the procurement committees had knowledge in procurement before joining the project; in Muecate treatment schools this was 25% (Table 19).

Table 19: Program committee training

		Procurement knowledge of the procurement committee before the project			Procurement committee training before joining the programme		
		Yes	**No**	**Total**	**Yes**	**No**	**Total**
District	Muecate	25%	75%	4	25%	75%	4
	Nacaroa	45.5%	54.5%	11	66.7%	33.3%	12
	Total	40%	60%	15	56.3%	43.8%	16
Disaggregation base	Muecate control	0%	0%	0	0%	0%	0
	Muecate treatment	25%	75%	4	25%	75%	4
	Nacaroa control	0%	100%	1	50%	50%	2
	Nacaroa treatment	50%	50%	10	70%	30%	10
	Total	40%	60%	15	56.3%	43.8%	16

The procurement committee members interviewed in Nacaroa treatment schools were knowledgeable in procurement, having acquired that knowledge from similar programs, training and workshops, other nongovernmental organizations (NGOs) and government training (Figure 6). The procurement committee members in Muecate schools did not have such training.

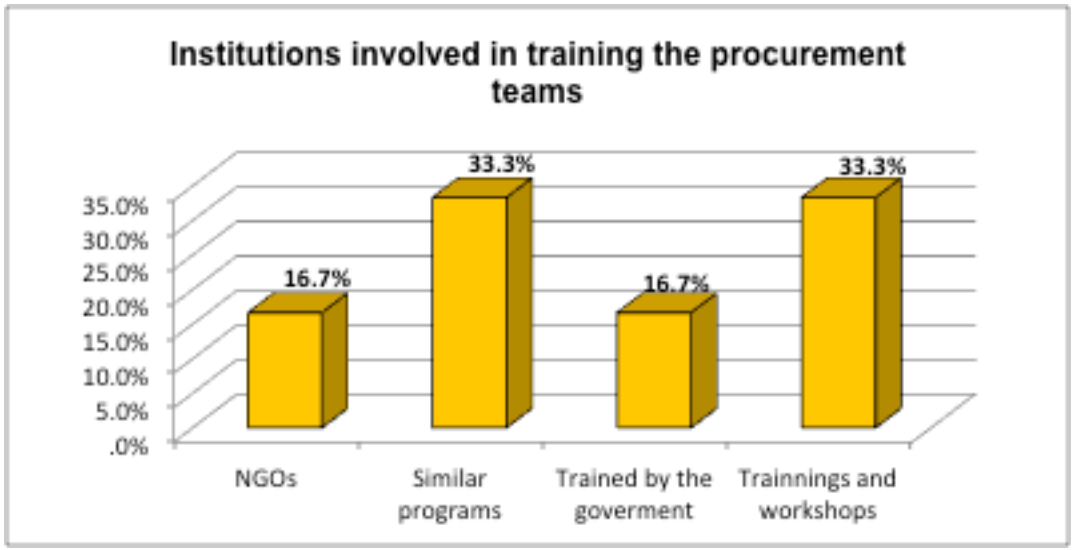

Figure 6: Institutions involved in training the procurement teams knowledge acquisition

The specific procurement management areas in which the procurement committee members reported having knowledge were warehouse management, quality management and general procurement topics (see Table 20). No committee member had knowledge in forward contracts.

Table 20: Procurement committee members' areas of knowledge in procurement

		Warehouse management	Quality management	Procurement topics
District	Muecate	75%	75%	25%
	Nacaroa	58.3%	58.3%	16.7%
	Total	62.5%	62.5%	18.8%
Disaggregation base	Muecate control	0%	0%	0%
	Muecate treatment	75%	75.0%	25%
	Nacaroa control	0%	0%	0%
	Nacaroa treatment	50%	50.0%	20%
	Total	62.5%	62.5%	18.8%

3.3.3 Food products received in the schools

The treatment school's procurement teams confirmed that they did receive the four main products of the LRP programme: beans, peanuts, iodized salt and OFSP. These products were being supplied exclusively to the treatment areas in both districts, which is where the LRP project is being implemented (Figure 7). Some 75% of the procurement committee members interviewed confirmed that they had received enough food to feed all the eligible beneficiaries (Table 21). The treatment schools in Nacaroa had a higher rate of positive answers (80%) than those in Muecate (75%).

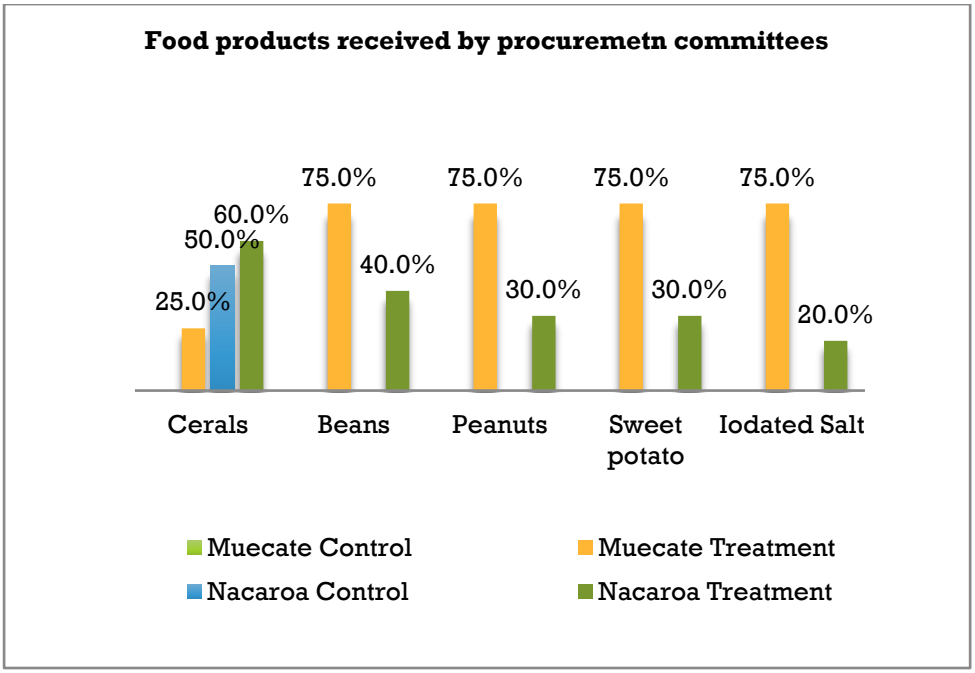

Figure 7: Food products received by procurement committees

The school committees also received other food products from the local farmer associations. This was particularly so for Muecate treatment schools (Table 21). More than 50% of the procurement committees confirmed that they received food products from farmer associations. In general the procurement teams received from the farmer associations the four food products that World Vision supplied plus maize. On average they received about 50 kg of each product.

Table 21: Food products received by procurement committees

		Are the products received enough to feed eligible students?			Do the procurement committees receive products from farmer associations?		
		Yes	**No**	**Total**	**Yes**	**No**	**Total**
District	Muecate	75%	25%	4	100%	0%	4
	Nacaroa	75%	25%	12	41.7%	58.3%	12
	Total	75%	25%	16	56.3%	43.8%	16
Disaggregation base	Muecate control	0%	0%	0	0%	0%	0
	Muecate treatment	75%	25%	4	100%	0%	4
	Nacaroa control	50%	50%	2	50%	50%	2
	Nacaroa treatment	80%	20%	10	40%	60%	10
	Total	75%	25%	16	56.3%	43.8%	16

3.3.4 Transportation

The food received from the farmer associations was transported to the schools using a variety of means such as vehicles rented from the World Vision, bicycles, private cars, rented cars etc. In some cases the community ferried the food to the schools. The most commonly used transport means were World Vision vehicles (33%) and human porters (22%) (Table 22).

Table 22: Transportation means for the food products supplied by farmer associations

		WV vehicle	WV rented vehicle	Own vehicle	Rented vehicle	Bicycle	On the head	Total
District	Muecate	0%	25%	25%	0%	25%	25%	4
	Nacaroa	20%	40%	0%	20%	0%	20%	5
	Total	11.1%	33.3%	11.1%	11.1%	11.1%	22.2%	9
Disaggregation base	Muecate control	0%	0%	0%	0%	0%	0%	0
	Muecate treatment	0%	25%	25%	0%	25%	25%	4
	Nacaroa control	0%	0%	0%	0%	0%	100%	1
	Nacaroa treatment	25%	50%	0%	25%	0%	0%	4
	Total	11.1%	33.3%	11.1%	11.1%	11.1%	22.2%	9

Note: WV = World Vision

3.3.5 Food Management Procedures

Some 69% of the school committees reported that their quality control method for the food products was visual assessment (Figure 8), 62.5% controlled their stores of the products by referring to the delivery notes, while 43.8% did so using a product inventory (Figure 9).

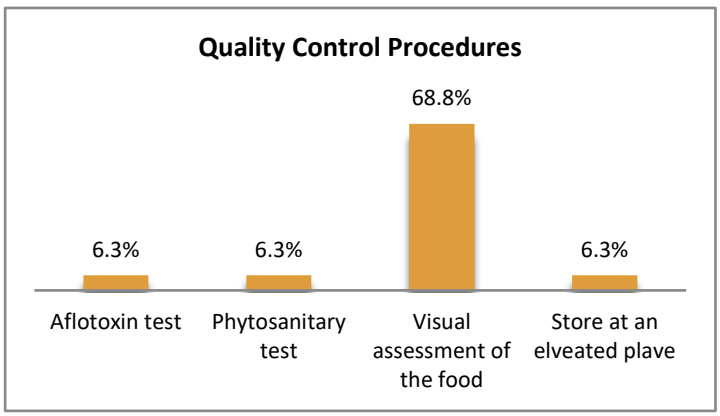

Figure 8: Procedures for quality control of the food products by the procurement committees

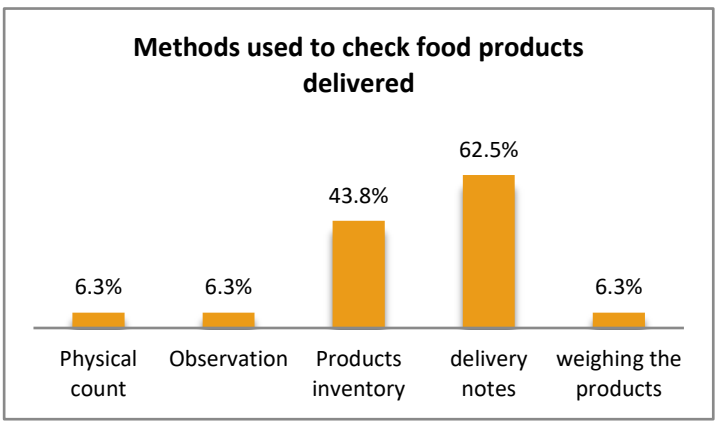

Figure 9: Methods used by the procurement committees to check the quantity of food products delivered

The quality control procedures were not implemented in the control schools in either district, but they all were applied in the Muecate treatment schools, except storage of the foods in an elevated location. Only visual assessment of the food and storage in an elevated place were used in the Nacaroa treatment schools. The most commonly used quality control measure in the treatment schools was visual assessment of the food.

3.3.6 Cooks

The survey interviewed cooks in each school. The number of cooks varied according to the number of students per school. In general there was one cook for each 100 students. Most of the cooks had between three (15.6%) four (24.4%) and five years (33.3%) of work experience as cooks, in the schools in both districts. (Table 23).

Table 23: Cooks' years of services

		Cooks ' years of experience						
		1 yrs	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs	Total (N)
District	Muecate	0.0%	0.0%	20.8%	33.3%	37.5%	8.3%	24
	Nacaroa	9.5%	9.5%	9.5%	14.3%	28.6%	0.0%	21
	Total	4.4%	4.4%	15.6%	24.4%	33.3%	4.4%	45
Disaggregation Base	Muecate Control	0.0%	0.0%	26.7%	33.3%	40.0%	0.0%	15
	Muecate Treatment	0.0%	0.0%	11.1%	33.3%	33.3%	22.2 %	9
	Nacaroa Control	8.3%	8.3%	16.7%	25.0%	16.7%	0.0%	12
	Nacaroa Treatment	11.1%	11.1%	0.0%	0.0%	44.4%	0.0%	9
	Total	4.4%	4.4%	15.6%	24.4%	33.3%	4.4%	45

On average cooks work as volunteers and 80% of them work in shifts as they articulate this activity with other responsibilities. (Table 24).

Table 24: Cooks challenges in the implementation of their activities

		How did your work as a cook articulates with your responsibilities				
		Shifts	They do not manage	They do shifts but it is difficult	They do not have other job	Total (N)
District	Muecate	87.5%	0.0%	8.3%	4.2%	24
	Nacaroa	71.4%	9.5%	19.0%	0.0%	21
	Total	80.0%	4.4%	13.3%	2.2%	45
Disaggregation Base	Muecate Control	93.3%	0.0%	0.0%	6.7%	15
	Muecate Treatment	77.8%	0.0%	22.2%	0.0%	9
	Nacaroa Control	50.0%	16.7%	33.3%	0.0%	12
	Nacaroa Treatment	100.0%	0.0%	0.0%	0.0%	9
	Total	80.0%	4.4%	13.3%	2.2%	45

Most of the cooks had received training before joining the World Vision program; 60 % of them received cooking training, 53.3% received training in nutrition, and 64.4% of the cooks received training in Hygiene practices. However the cooks working in schools in control areas have reported lower percentages of training in all training areas than the cooks in schools in treatment areas, where more than 78% of the cooks have been trained in all training areas mentioned. (Table 25).

Table 25: Cooks trained before the project

		Cooks trained before the LRP project			
		Cooking	Nutrition	Hygiene	Total
District	Muecate	41.7%	37.5%	45.8%	24
	Nacaroa	81.0%	71.4%	85.7%	21
	Total	60.0%	53.3%	64.4%	45
Disaggregation Baseline	Nacaroa control	20.0%	13.3%	26.7%	15
	Nacaroa treatment	77.8%	77.8%	77.8%	9
	Muecate Control	66.7%	58.3%	75.0%	12
	Muecate treatement	100.0%	88.9%	100.0%	9
	Total	60.0%	53.3%	64.4%	45

The program trained 82% of the cooks in cooking, 75.6% in nutrition and 71.1% in hygiene practices, in both districts. More than 85% of the Cooks in Nacaroa treatment areas were trained in all training areas and 66.7% of cooks in Muecate treatment areas were trained in all treatment areas. (Table 26).

Table 26: Cooks trained by the project

Cooks trained as part of the LRP program					
		Cooking	Nutrition	Hygiene	Total
District	Muecate	79.2%	70.8%	58.3%	24
	Nacaroa	85.7%	81.0%	85.7%	21
	Total	82.2%	75.6%	71.1%	45
Disaggregation baseline	Muecate Control	86.7%	73.3%	53.3%	15
	Muecate Treatment	66.7%	66.7%	66.7%	9
	Nacaroa Control	75.0%	75.0%	75.0%	12
	Nacaroa Treatment	100.0%	88.9%	100.0%	9
	Total	82.2%	75.6%	71.1%	45

55.3% of the cooks in the whole program have reported not to have all utensils needed for their cooking activities in both districts. In the schools in Muecate treatment areas, 100 % of the cooks have reported so. And 55.6 % of cooks in Nacaroa treatment areas have reported the same. (Table 27).

Table 27: Cooking utensils

		Does the cooks have all utensils to cook?		
		Yes	No	Total
District	Muecate	29.2%	70.8%	24
	Nacaroa	66.7%	33.3%	21
	Total	46.7%	53.3%	45
Baseline	Muecate Control	46.7%	53.3%	15
	Muecate Treatment	0.0%	100.0%	9
	Nacaroa Control	83.3%	16.7%	12
	Nacaroa Treatment	44.4%	55.6%	9
	Total	46.7%	53.3%	45

When asked what do they lack to perform their activity they reported that they lack uniforms (29.2%), hygiene products (37.5%), pans (29.2%), tableware (dishes) (83.3%).

However when asked about how satisfied they are with this activity they have reported levels of satisfaction that varied from average to very satisfied, both in treatment and control areas.

Table 28: Cooks' work satisfaction levels

		Cooks' Work Satisfaction Levels					
		Little	Low	Average	Good	Very good	Total
District	Muecate	0.0%	4.2%	16.7%	50.0%	29.2%	24
	Nacaroa	0.0%	4.8%	33.3%	14.3%	47.6%	21
	Total	0.0%	4.4%	24.4%	33.3%	37.8%	45
Disaggregation Baseline	Muecate Control	0.0%	0.0%	13.3%	60.0%	26.7%	15
	Muecate Treatment	0.0%	11.1%	22.2%	33.3%	33.3%	9
	Nacaroa Control	0.0%	0.0%	25.0%	16.7%	58.3%	12
	Nacaroa Treatment	0.0%	11.1%	44.4%	11.1%	33.3%	9
	Total	0.0%	4.4%	24.4%	33.3%	37.8%	45

3.3.7 Food Transporters

The program counted on two transporters, each of whom owned Nissan and Mitsubishi vehicles with a capacity of 4 MT each. The transporters had exclusive contracts with World Vision. The contract payment terms were related to the mileage and the load in each trip. They charged 128 Mtn per ton and allowed a minimum of 4 tons per trip. Each trip supplied on average 3–5 schools,

depending on the quantity of food each school needed. They transported mainly CSB+ and cooking instruments.

3.3.8 Government Officials

Government officials at the district and provincial levels were interviewed. Their perception was that the program had been implemented in all the schools in both districts for three years and that the implementation of the program was made possible by support from donors and NGOs, since the government did not a have budget line to finance it.

The role of the education directorate staff was to disseminate key messages and sensitize the community and facilitate coordination of its mobilization in order to assess how the program would continue when the donors were gone. In particular, the health district directorate provided inputs like first aid kits and medicine for common illnesses.

The health directorate staff had the responsibility of monitoring the food management chain from the receipt of the products to their distribution and storage, to make sure that they were kept in the proper conditions before they were cooked and offered to students. Their main view was that the program should consider:

- Improving the variety of the food;
- Providing incentives to volunteers;
- Improving the conditions of volunteers by providing them clothing and hygiene products;
- Including appropriate equipment for preparing the food to ensure that bad practices were not perpetuated that end up increasing health risks for the consumers of food;
- Improving coordination between World Vision and the government and the planning for and distribution of food according to the schooling calendar.

They perceived the programme as contributing to:

- improved health of students
- improved academic performance
- increased retention and motivation of students
- increased enrolment
- decreased early marriages

3.3.9 Suppliers of food products

The supplier to World Vision provided beans, peanuts and salt. The first two products were obtained locally from farmers in Muecate. She bought 5 MT of beans and 5 MT of peanuts. She had no difficulties in obtaining the required quantities. She bought 4 MT of iodized salt from regional suppliers in Ilha de Mocambique. She paid 225,000 Mtn for peanuts, 175,000 Mtn for beans and 60,000 Mtn for salt. She stored the products in a private warehouse and used her private vehicle to transport them.

3.4 Farmers' production

3.4.1 Profile of farmer associations

Of the farmer associations that participated in the survey, 59% in Nacaroa and 40% in Muecate were officially registered (Table 28). About 47% of the farmer associations were registered between 2012 and 2015. In the control school areas fewer than 36% of the associations were registered.

Out of the total farmer associations, 43% reported that their members paid membership fees (Table 29). The associations in the treatment areas had high numbers of members paying membership fees, at 60% in Muecate and 72% in Nacaroa.

Table 29: Farmer associations' legal registration and membership

		Is the association legally registered?			Do members pay membership fees?		
		Yes	No	Total	Yes	No	Total
District	Muecate	40%	60%	25	40%	60%	25
	Nacaroa	59.1%	40.9%	22	45.5%	54.5%	22
	Total	48.9%	51.1%	47	42.6%	57.4%	47
Disaggregation Baseline	Muecate control	33.3%	66.7%	15	26.7%	73.3%	15
	Muecate treatment	50%	50%	10	60%	40%	10
	Nacaroa control	36.4%	63.6%	11	18.2%	81.8%	11
	Nacaroa treatment	81.8%	18.2%	11	72.7%	27.3%	11
	Total	48.9%	51.1%	47	42.6%	57.4%	47

Some 85% of the farmer associations acknowledged that being registered gave them easier market access, access to commercial relationships with other stakeholders and lower logistic costs, as well as allowing them to increase their volume of production. The most important benefit, which was acknowledged by 65% of the farmer associations, was access to commercial relationships (Figure 10). As a farmer it is much easier to enter into business with other enterprises if you are a part of an officially registered group or association. Another significant benefit, which was recognized by 47.5% of the farmer associations, was market access. It would be easier for members of an officially registered association to take their produce to the market than for individual farmers.

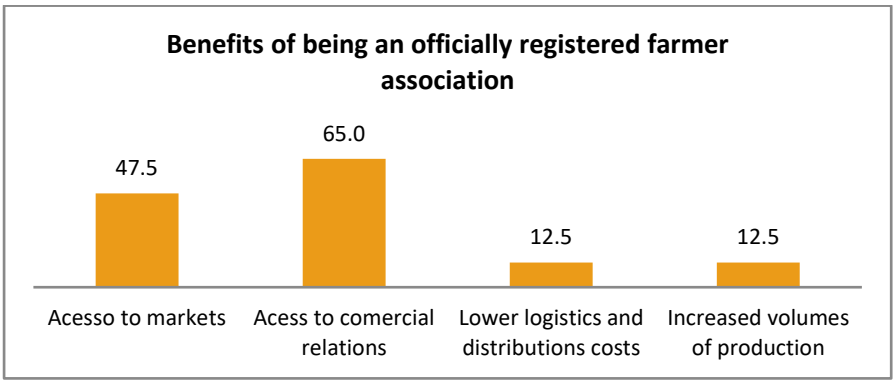

Figure 10: Benefits of being an officially registered farmer association

Famer associations with 10–14 members constituted 27% of the total as did associations with 15–19 members. Out of the farmer associations that participated in the survey, 55% had between 5 and 9 female members and 38% had that number of male members. Some 53% of farmer associations reported that their members received training in business management, with the levels being 70% in the Muecate treatment areas and 82% in Nacaroa treatment areas (Table 30).

Table 30: Farmer training

		Members who received any training in business management		
		Yes	No	Total
District	Muecate	52%	48%	25
	Nacaroa	59.1%	40.9%	22
	Total	55.3%	44.7%	47
Disaggregation baseline	Muecate control	40%	60%	15
	Muecate treatment	70%	30%	10
	Nacaroa control	36.4%	63.6%	11
	Nacaroa treatment	81.8%	18.2%	11
	Total	55.3%	44.7%	47

About 52% of the farmer associations considered their members to have average record keeping knowledge and 30% thought that their members' skills in that area were good. At the same time, 37% of the associations reported that their members had average and good skills in cash flow analysis (Table 31). The level of knowledge in record keeping and basic cash flow analysis was slightly higher for members of farmer associations in the Nacaroa treatment areas.

Table 31: Farmer training in record keeping and cash flow analysis

		Level of skills in record keeping			Level of skills in basic cash flow analysis			Total
		Low	Average	Good	Low	Average	Good	
District	Muecate	7.7%	46.2%	46.2%	7.7%	30.8%	61.5%	13
	Nacaroa	28.6%	57.1%	14.3%	42.9%	42.9%	14.3%	14
	Total	18.5%	51.9%	29.6%	25.9%	37%	37%	27
Disaggregation baseline	Muecate control	16.7%	33.3%	50%	16.7%	16.7%	66.7%	6
	Muecate treatment	0%	57.1%	42.9%	0%	42.9%	57.1%	7
	Nacaroa control	20%	80%	0%	40.0%	40%	20%	5
	Nacaroa treatment	33.3%	44.4%	22.2%	44.4%	44.4%	11.1%	9
	Total	18.5%	51.9%	29.6%	25.9%	37%	37%	27

In terms of the knowledge of farmers in profit and loss statement analysis, 52% and 26% of the farmer associations considered their members to have average and good skills, respectively, in basic profit and loss statement analysis. Some 26% of the farmer associations considered the level of knowledge of their members in forward contracts to be average, while 33% of the associations thought that their members had good skills in that topic (Table 32).

Table 32: Level of skills in profit and loss statement and forward contracts

		Level of skills in profit and loss statement				Level of skills in forward contracts				Total
		Low	Average	Good	Not answered	Low	Average	Good	Not answered	
District	Muecate	7.7%	69.2%	23.1%	0%	23.1%	53.8%	23.1%	0%	13
	Nacaroa	28.6%	35.7%	28.6%	7.1%	35.7%	28.6%	28.6%	7.1%	14
	Total	18.5%	51.9%	25.9%	3.7%	29.6%	40.7%	25.9%	3.7%	27
Disaggregation baseline	Muecate control	16.7%	66.7%	16.7%	0%	16.7%	66.7%	16.7%	0%	6
	Muecate treatment	0%	71.4%	28.6%	0%	28.6%	42.9%	28.6%	0%	7
	Nacaroa control	20%	40%	20%	20%	40%	20%	20%	20%	5
	Nacaroa treatment	33.3%	33.3%	33.3%	0%	33.3%	33.3%	33.3%	0%	9
	Total	18.5%	51.9%	25.9%	3.7%	29.6%	40.7%	25.9%	3.7%	27

For 33% of the farmer associations the level of knowledge of their members to prepare a labour calendar was average, while for 41% of the associations their members had good skills (Table 33). In regard to business plan preparation, 41% of the associations considered their members' knowledge to be average while 26% of the associations thought the members' skills were of a good level.

Table 33: Level of skills in labour calendar and business plan

		Level of skills in labour calendar			Level of skills in business plan preparation				Total
		Low	Average	Good	Low	Average	Good	Not answered	
District	Muecate	7.7%	30.8%	61.5%	23.1%	53.8%	23.1%	0%	13
	Nacaroa	42.9%	35.7%	21.4%	35.7%	28.6%	28.6%	7.1%	14
	Total	25.9%	33.3%	40.7%	29.6%	40.7%	25.9%	3.7%	27
Disaggregation baseline	Muecate control	16.7%	33.3%	50%	16.7%	66.7%	16.7%	0%	6
	Muecate treatment	0%	28.6%	71.4%	28.6%	42.9%	28.6%	0%	7
	Nacaroa control	60%	0%	40%	40%	20%	20%	20%	5
	Nacaroa treatment	33.3%	55.6%	11.1%	33.3%	33.3%	33.3%	0%	9
	Total	25.9%	33.3%	40.7%	29.6%	40.7%	25.9%	3.7%	27

Farmer associations had received training in agriculture techniques. In the Muecate treatment areas 90% of the associations were trained, while in Nacaroa this was 82%. In Nacaroa control areas only 55% of the associations had received training. This was 66.7 % for Muecate district.

Table 34: Training in agronomy skills

		Famers' associations that received agronomy training		
		Yes	**No**	**Total (N)**
District	Muecate	76%	24%	25
	Nacaroa	68.2%	31.8%	22
	Total	72.3%	27.7%	47
Disaggregation baseline	Muecate control	66.7%	33.3%	15
	Muecate treatment	90%	10%	10
	Nacaroa control	54.5%	45.5%	11
	Nacaroa treatment	81.8%	18.2%	11
	Total	72.3%	27.7%	47

For 45% of the farmer associations, the members' level of skills in quality control was good, while for 36% of the associations the members had average skills in quality control (Table 35). In regard crop planning skills, 29% of the farmer associations regarded their members' level of skills as average, while for 54% of the associations the skill level was good (Table 36).

Table 35: Training in quality control and production planning

		Quality control			**Production planning**		
		Low	**Average**	**Good**	**Low**	**Average**	**Good**
District	Muecate	4.3%	30.4%	56.5%	4.3%	30.4%	60.9%
	Nacaroa	10.5%	42.1%	31.6%	10.5%	26.3%	47.4%
	Total	7.1%	35.7%	45.2%	7.1%	28.6%	54.8%
Disaggregation baseline	Muecate control	7.7%	30.8%	53.8%	7.7%	38.5%	46.2%
	Muecate treatment	0%	30%	60%	0%	20%	80%
	Nacaroa control	0%	50%	12.5%	0%	25%	37.5%
	Nacaroa treatment	18.2%	36.4%	45.5%	18.2%	27.3%	54.5%
	Total	7.1%	35.7%	45.2%	7.1%	28.6%	54.8%

Farmer's agronomy skills for yield increase were considered average by 36% of their associations and good by 43% of the associations (Table 35). In terms of skills in the production and conservation of sweet potato, 12% and 17% of the farmer associations regarded their members to have average and good skills, respectively (Table 36).

Table 36: Farmers' skills in increasing yields and in sweet potato production and conservation

		Yield increasing			Production and conservation of sweet potato			
		Low	Average	Good	Low	Average	Good	Total
District	Muecate	4.3%	30.4%	52.2%	26.1%	17.4%	21.7%	23
	Nacaroa	10.5%	42.1%	31.6%	15.8%	5.3%	10.5%	19
	Total	7.1%	35.7%	42.9%	21.4%	11.9%	16.7%	42
Disaggregation baseline	Muecate control	7.7%	23.1%	46.2%	38.5%	7.7%	0%	13
	Muecate treatment	0%	40%	60%	10%	30%	50%	10
	Nacaroa control	0%	50%	12.5%	12.5%	0%	12.5%	8
	Nacaroa treatment	18.2%	36.4%	45.5%	18.2%	9.1%	9.1%	11
	Total	7.1%	35.7%	42.9%	21.4%	11.9%	16.7%	42

With regard to pest prevention, 41% and 31% of the farmer associations regarded their members to have average or good skills, respectively (Table 37).

Table 37: Training in pest prevention

		Low	Average	Good	Total
District	Muecate	13%	47.8%	26.1%	23
	Nacaroa	15.8%	31.6%	36.8%	19
	Total	14.3%	40.5%	31%	42
Disaggregation baseline	Muecate control	15.4%	53.8%	15.4%	13
	Muecate treatment	10%	40%	40%	10
	Nacaroa control	12.5%	12.5%	37.5%	8
	Nacaroa treatment	18.2%	45.5%	36.4%	11
	Total	14.3%	40.5%	31%	42

3.4.2 Storage Infrastructure

About 38% of the farmer associations stored their products in their warehouse and 40% of them used their members' warehouses. In the Muecate treatment area 60% of the associations stored their products in the farmer association warehouse while 30% of the associations used their members' households.

In the Nacaroa treatment area, generally farmers stored the products in both their association's warehouses and members' households (Table 38). In the Muecate treatment areas 60% of the farmer associations stored their products in their associations' warehouse and 30% in members' households.

Table 38: Storage facilities for farmer associations' products

		Farmer association warehouse	Rent warehouse space	Members' households	Total
District	Muecate	36%	4%	44%	25
	Nacaroa	40.9%	0%	36.4%	22
	Total	38.3%	2.1%	40.4%	47
Disaggregation baseline	Muecate control	20%	0%	53.3%	15
	Muecate treatment	60%	10%	30%	10
	Nacaroa control	27.3%	0%	27.3%	11
	Nacaroa treatment	54.5%	0%	45.5%	11
	Total	38.3%	2.1%	40.4%	47

The farmer associations considered their main problem in food storage to be theft (57%) followed by the lack of storage space (Table 39).

Table 39: Product storage challenges

		Theft	Lack of space	Lack of adequate storage for OFSP	Other	Total
District	Muecate	68%	32%	24%	12%	25
	Nacaroa	45.5%	27.3%	4.5%	27.3%	22
	Total	57.4%	29.8%	14.9%	19.1%	47
Disaggregation baseline	Muecate control	66.7%	26.7%	20%	6.7%	15
	Muecate treatment	70%	40%	30%	20%	10
	Nacaroa control	36.4%	18.2%	9.1%	18.2%	11
	Nacaroa treatment	54.5%	36.4%	0%	36.4%	11
	Total	57.4%	29.8%	14.9%	19.1%	47

3.4.3 Production

The farmer associations had a diversified production and 40% of them were producing three to four crops, while 38.3% were producing five to six agriculture products (Table 40). The most common products were beans, maize, peanuts and sweet potato.

Table 40: Number of products produced by farmer associations

		1–2	3–4	5–6	7–8	9–10	Total
District	Muecate	4%	28%	52%	4%	12%	25
	Nacaroa	13.6%	54.5%	22.7%	4.5%	4.5%	22
	Total	8.5%	40.4%	38.3%	4.3%	8.5%	47
Disaggregation baseline	Muecate control	0%	40%	33.3%	6.7%	20%	15
	Muecate treatment	10%	10%	80%	0%	0%	10
	Nacaroa control	18.2%	54.5%	18.2%	0%	9.1%	11
	Nacaroa treatment	9.1%	54.5%	27.3%	9.1%	0%	11
	Total	8.5%	40.4%	38.3%	4.3%	8.5%	47

Among the famers' associations, 40% produced OFSP (Table 41) and 60% of those were in the treatment area in both districts.

Table 41: Farmer associations producing OFSP

		Farmers associations producing OFSP		
		Yes	No	Total
District	Muecate	36%	64%	25
	Nacaroa	45.5%	54.5%	22
	Total	40.4%	59.6%	47
Disaggregation baseline	Muecate control	20%	80%	15
	Muecate treatment	60%	40%	10
	Nacaroa control	27.3%	72.7%	11
	Nacaroa treatment	63.6%	36.4%	11
	Total	40.4%	59.6%	47

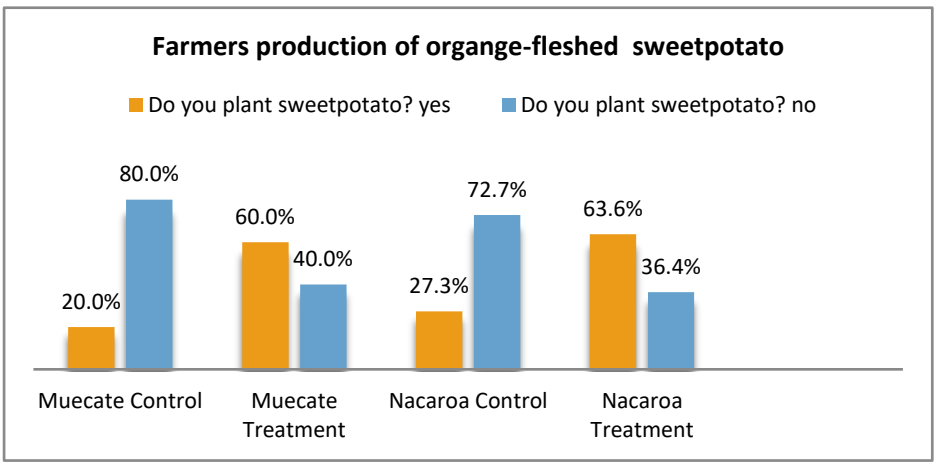

Figure 5: Farmers production of orange-fleshed sweet potato

OFSP was a new crop for the farmer associations and only less than 25% of those in the control areas were producing it. Of the farmer associations that participated in the survey, only 31% started producing it in 2017 and 37% started producing in 2018.

Some 19% of the farmer associations had entered into a commercial relationship with an agribusiness. However only 33% of these had a formal relationship, 11% had an informal relationship with an agribusiness and 55.6% had another type of relationship (Table 42).

Table 42: Farmer associations' relationship with agribusinesses

		Number of agribusinesses			Type of relationship			
		0	1	Total	Formal	Informa l	Other	Total
District	Muecate	75%	25%	4	25%	0%	75%	4
	Nacaroa	40%	60%	5	40%	20%	40%	5
	Total	55.6%	44.4%	9	33.3%	11.1%	55.6%	9
Disaggregation baseline	Muecate control	100%	0%	2	0%	0%	100%	2
	Muecate treatment	50%	50%	2	50%	0%	50%	2
	Nacaroa control	66.7%	33.3%	3	0%	33.3%	66.7%	3
	Nacaroa treatment	0%	100%	2	100%	0%	0%	2
	Total	55.6%	44.4%	9	33.3%	11.1%	55.6%	9

Some 17% of the farmer associations had a contractual relationship with an agribusiness. Out of those 12.5% had forward contracts and 37.5% had input supply contracts (Table 43). The farmer associations in the treatment areas with contractual dealings with agribusinesses constituted 30% or less of the total farmers, compared with 6.7% or less for the control areas (Table 43).

Table 43: Farmer associations in contractual relationship with agribusiness

		Do you have any contractual relationship with an agribusiness?			If yes, what type of contract do you have?			
		Yes	**No**	**Total**	**Future contract**	**Input supply**	**Other**	**Total**
District	Muecate	16%	84%	25	25%	25%	50%	4
	Nacaroa	18.2%	81.8%	22	0%	50%	0%	4
	Total	17%	83%	47	12.5%	37.5%	25%	8
Disaggregation baseline	Muecate control	6.7%	93.3%	15	0%	0%	100%	1
	Muecate treatment	30%	70%	10	33.3%	33.3%	33.3%	3
	Nacaroa control	0%	100%	11	0%	0%	0%	0
	Nacaroa treatment	36.4%	63.6%	11	0%	50%	0%	4
	Total	17%	83%	47	12.5%	37.5%	25%	8

Given the contractual nature of the arrangements between farmer associations and agribusinesses, farmers made an effort to comply with the standards of quality included in their contracts, as 40% of the associations indicated (Table 44). The effort was greater in the

treatment areas. In Muecate 30% of the farmer associations reported that most of their members made an effort to comply; in Nacaroa this was 54.5% of the associations.

Table 44: Farmer associations' compliance with quality standards

		All members make an effort to comply	Most members make an effort	Some members make an effort	They do not make an effort	Other	Total
District	Muecate	36%	16%	8%	4%	36%	25
	Nacaroa	45.5%	13.6%	4.5%	0%	36.4%	22
	Total	40.4%	14.9%	6.4%	2.1%	36.2%	47
Disaggregation baseline	Muecate control	40%	13.3%	0%	0%	46.7%	15
	Muecate treatment	30%	20%	20%	10%	20%	10
	Nacaroa control	36.4%	9.1%	0%	0%	54.5%	11
	Nacaroa treatment	54.5%	18.2%	9.1%	0%	18.2%	11
	Total	40.4%	14.9%	6.4%	2.1%	36.2%	47

In general, 72% of the farmer associations were not happy with the prices offered by crop buyers (Table 45).

Table 45: Farmer associations' satisfaction with their produce selling prices

		Not satisfied	Sometimes happy	Happy with the price	Very happy	Total
District	Muecate	76%	8%	4%	0%	25
	Nacaroa	68.2%	9.1%	9.1%	4.5%	22
	Total	72.3%	8.5%	6.4%	2.1%	47
Disaggregation baseline	Muecate control	73.3%	6.7%	0%	0%	15
	Muecate treatment	80%	10%	10%	0%	10
	Nacaroa control	63.6%	18.2%	0%	9.1%	11
	Nacaroa treatment	72.7%	0%	18.2%	0%	11
	Total	72.3%	8.5%	6.4%	2.1%	47

About 64% of the farmer associations were able to sell all their produce, but 36% of them could not (Table 46). The proportion of associations that could not sell all their members' produce was higher in the treatment areas (at 20% in Muecate and 73% in Nacaroa) than in the control areas (at 13% in Muecate and 46% in Nacaroa).

Table 46: Farmer associations' ability to sell their production

Is the association able to sell all its members' products?				
		Yes	**No**	**Total**
District	Muecate	84%	16%	25
	Nacaroa	40.9%	59.1%	22
	Total	63.8%	36.2%	47
Disaggregation base	Muecate control	86.7%	13.3%	15
	Muecate treatment	80%	20%	10
	Nacaroa control	54.5%	45.5%	11
	Nacaroa treatment	27.3%	72.7%	11
	Total	63.8%	36.2%	47

Farmer associations reported that when they could not sell all their production they consumed it (53%), used it for planting in the next season (47%) or offered it to schools (30%).

The services provided to the farmer associations are shown in Table 47. The main ones were extension services, inputs, weather information and market information. For at least 40% of the associations those services were provided mainly by Serviço Distrital de Saude Mulher e Acção Social (SDAE), except agriculture inputs and extension services, which for 80% and 50% of the associations, respectively, were provided by NGOs.

Table 47: Services provided to farmer associations

		Weather information	**Market Information**	**Credit information**	**Receive inputs**	**Extension services**
District	Muecate	48%	24%	20%	48%	64%
	Nacaroa	27.3%	27.3%	9.1%	59.1%	59.1%
	Total	38.3%	25.5%	14.9%	53.2%	61.7%
Disaggregation base	Muecate control	46.7%	13.3%	13.3%	40%	60%
	Muecate treatment	50%	40%	30%	60%	70%
	Nacaroa control	0%	9.1%	0%	54.5%	54.5%
	Nacaroa treatment	54.5%	45.5%	18.2%	63.6%	63.6%
	Total	38.3%	25.5%	14.9%	53.2%	61.7%

Higher numbers of farmer associations in the treatment areas received the support services compared with the control areas (Table 47). In Nacaroa no farmer association in the control areas received weather or market information services, but in the treatment areas the associations received all the services. We can conclude, therefore, that the impact in Nacaroa of those services must have been associated with the programme and was remarkable.

3.5 Market Assessment

According to the market committees interviewed, 30% stated that their committee had two members (Table 48).

Table 48: Members in market committees

		Members in the market management committee						
		0	**1**	**2**	**3**	**5**	**12**	**Total**
District	Muecate	0%	14.3%	57.1%	28.6%	0%	0%	7
	Nacaroa	16.7%	16.7%	0%	16.7%	33.3%	16.7%	6
	Total	7.7%	15.4%	30.8%	23.1%	15.4%	7.7%	13
Administrative posts	Muecate-sede	0%	0%	100%	0%	0%	0%	1
	Imala	0%	0%	0%	100%	0%	0%	2
	Muoluane	0%	0%	100%	0%	0%	0%	1
	Nacaroa-sede	0%	50%	0%	0%	0%	50%	2
	Inteta	0%	0%	0%	33.3%	66.7%	0%	3
	Saua	100%	0%	0%	0%	0%	0%	1
	Total	10%	10%	20%	30%	20%	10%	10

3.5.1 Infrastructure

In general the markets were rudimentary and many of them did not have electricity, so the sellers had solar power for lighting. The provision of water also was poor (Table 49).

Table 49: Market water, lighting and sanitation infrastructure

		Are sellers satisfied with the water supply in the market?				
		Excellent	Good	Average	Bad	Total
District	Muecate	0%	0%	28.6%	71.4%	7
	Nacaroa	0%	0%	16.7%	83.3%	6
	Total	0%	0%	23.1%	76.9%	13
		Are sellers satisfied with the lighting in the market?				
		Excellent	Good	Average	Bad	Total
District	Muecate	0%	0%	42.9%	57.1%	7
	Nacaroa	0%	0%	16.7%	83.3%	6
	Total	0%	0%	30.8%	69.2%	13
		Are sellers satisfied with the sanitation in the market?				
		Excellent	Good	Average	Bad	Total
District	Muecate	0%	0%	28.6%	71.4%	7
	Nacaroa	0%	0%	33.3%	66.7%	6
	Total	0%	0%	30.8%	69.2%	13

The market stands were considered by 77% of the sellers to be of average quality (Table 50).

Table 50 Market infrastructure for stands

		Are sellers satisfied with the general infrastructure (stands) of the market?				
		Excellent	Good	Average	Bad	Total
District	Muecate	0%	14.3%	57.1%	28.6%	7
	Nacaroa	0%	0%	100%	0%	6
	Total	0%	7.7%	76.9%	15.4%	13

3.6 Supply

3.6.1 Producers

In all the markets covered in the survey, farmers were present selling their products, and data from the market committees showed that 62% of the farmers had farms near markets while 23% had farms in other administrative posts (Table 51). Some 71% of the market committees reported that farmers' plots were within a walking distance from the market.

Table 51: Location of producers' plots

		In the market locality	Other administrative post	Nearby district	Total
District	Muecate	71.4%	28.6%	0%	7
	Nacaroa	50%	16.7%	33.3%	6
	Total	61.5%	23.1%	15.4%	13

The producers who sold their products in the market did sell the four products procured locally by the LRP project. Beans and peanuts were available from many sellers, but only 15% of the producers sold OFSP (Table 52). Other agricultural products such as cassava, corn, rice, tomato and onions also were available.

Table 52: Products sold by producers

		Beans	Peanuts	Sweet potato	Salt	Total
District	Muecate	42.9%	71.4%	14.3%	0%	7
	Nacaroa	66.7%	66.7%	16.7%	16.7%	6
	Total	53.8%	69.2%	15.4%	7.7%	13

The quantities of beans supplied by farmers are shown in Table 53, with 25 kg, which is supplied by 28.6% of the farmers, as the most common quantity. Some 14.3% of the farmers supply lower quantities and others supply up to 50,000 kg.

Table 53: Quantities of beans supplied

		20 kg	**25 kg**	**50 kg**	**74 kg**	**100 kg**	**50,000 kg**	**Total**
District	Muecate	0%	25%	0%	25%	25%	25%	4
	Nacaroa	33.3%	33.3%	33.3%	0%	0%	0%	3
	Total	14.3%	28.6%	14.3%	14.3%	14.3%	14.3%	7

The prices at which farmers expected to sell their beans in the markets are shown in Table 54 and the actual selling prices in Table 46. Some 60% of the farmers expected to sell their beans at 30 Mtn per kg. Some 40% of the farmers sold their beans at 20 Mtn per kg (Table 55).

Table 54: Expected price of beans per kg

		Expected price of beans			
		30 Mtn	70 Mtn	100 Mtn	Total
District	Muecate	33.3%	33.3%	33.3%	3
	Nacaroa	100%	0%	0%	2
	Total	60%	20%	20%	5

Table 55: Actual price of beans per kg

		Actual price of beans				
		20 Mtn	25 Mtn	30 Mtn	70 Mtn	Total
District	Muecate	66.7%	0%	0%	33.3%	3
	Nacaroa	0%	50%	50%	0%	2
	Total	40%	20%	20%	20%	5

For peanuts 20% of the farmers sell them in 40 kg lots (Table 56).

Table 56: Quantities in which peanuts were supplied

		Quantity of peanuts supplied					
		40 kg	46 kg	100 kg	400 kg	50,000 kg	Total
District	Muecate	0%	25%	25%	25%	25%	4
	Nacaroa	100%	0%	0%	0%	0%	1
	Total	20%	20%	20%	20%	20%	5

For peanuts, 70 Mtn per kg was the price favoured by most, with 28.6% of the farmers expecting their crop to fetch that (Table 57). However, peanuts went for 30–75 Mtn (Table 58).

Table 57: Expected price of peanuts per kg

		Expected peanut price						
		30 Mtn	40 Mtn	50 Mtn	60 Mtn	70 Mtn	100 Mtn	Total
District	Muecate	0%	25%	25%	25%	25%	0%	4
	Nacaroa	33.3%	0%	0%	0%	33.3%	33.3%	3
	Total	14.3%	14.3%	14.3%	14.3%	28.6%	14.3%	7

Table 58: Actual price of peanuts per kg

		Peanut price				
		30 Mtn	60 Mtn	70 Mtn	75 Mtn	Total
District	Muecate	0%	50%	50%	0%	2
	Nacaroa	50%	0%	0%	50%	2
	Total	25%	25%	25%	25%	4

3.6.2 Intermediaries

Out of the intermediaries who participated in the FGDs, around 70% had their own market stand. They had other activities apart from selling produce in the market, including farm work and studying. They sold products of a wide range besides beans, peanuts and salt, such as maize, rice, onions and tomato. They did not sell OFSP (Table 59).

Table 59: Products sold in the markets by intermediaries

		Beans	Peanuts	Salt	Total
District	Muecate	28.6%	28.6%	0%	7
	Nacaroa	33.3%	16.7%	16.7%	6
	Total	30.8%	23.1%	7.7%	13

Close to 70% of the sellers earned around 200 Mtn per day, while 31% got 1,400 Mtn or more per day (Table 60).

Table 60. Intermediaries' daily income from sale

		Value in Mtn resulting form sales					
		1–200	201–410	401–600	1201–1400	1401+	Total
District	Muecate	57.1%	0%	42.9%	14.3%	14.3%	7
	Nacaroa	83.3%	33.3%	0%	0%	50%	6
	Total	69.2%	15.4%	23.1%	7.7%	30.8%	13

Out of the intermediaries interviewed 54% bought their products from wholesalers and 31% from producers (Table 61).

Table 61: Intermediaries' main produce suppliers

		Producers	Wholesalers	Trade fairs	Community	Total
District	Muecate	14.3%	71.4%	0%	14.3%	7
	Nacaroa	50%	33.3%	16.7%	0%	6
	Total	30.8%	53.8%	7.7%	7.7%	13

3.7 Demand

3.7.1 Consumers' market purchases

Only 31% of the consumers interviewed reported purchasing beans or peanuts and only 8% bought salt. They did not buy sweet potato (Table 62).

Table 62: Consumers' market purchases

		Beans	Peanuts	Salt	Total
District	Muecate	28.6%	42.9%	0%	7
	Nacaroa	33.3%	16.7%	16.7%	6
	Total	30.8%	30.8%	7.7%	13

3.7.2 Quantities of produce bought and prices

The quantities of peanuts purchased by consumers are shown in Table 63. The number of consumers who purchased 14 kg, 25 kg and 50 kg were equal.

Table 63: Consumers quantities of peanuts purchased

		Peanut quantities purchased			
		14 kg	25 kg	30 kg	Total
District	Muecate	50%	50%	0%	2
	Nacaroa	0%	0%	100%	1
	Total	33.3%	33.3%	33.3%	3

The consumer peanut prices varied considerably, reaching 50 Mtn to 90 Mtn per kg in the scarcity season instead of the usual 20–80 Mtn as illustrated in Table 64.

Table 64: Peanut prices

		Peanut prices		
		20 Mtn	80 Mtn	Total
District	Muecate	50%	50%	2
	Nacaroa	0%	0%	0
	Total	50%	50%	2

The consumers bought beans also in 5 kg, 7 kg, 10 kg and 75 kg (Table 65).

Table 65: Bean quantities purchased by consumers

		Bean quantities purchased				
		5 kg	7 kg	10 kg	75 kg	Total
District	Muecate	50%	0%	50%	0%	2
	Nacaroa	0%	50%	0%	50%	2
	Total	25%	25%	25%	25%	4

According to the consumers, bean prices varied considerably, going from 20 to 40 Mtn per kg in the scarcity season instead of 10–20 Mtn, which is the usual price range (Table 66).

Table 66: Bean prices

		Bean prices			
		10 Mtn	15Mtn	20Mtn	Total
District	Muecate	33.3%	33.3%	33.3%	3
	Nacaroa	100%	0%	0%	1
	Total	50%	25%	25%	4

4. Summary and Conclusions

This report presents the findings from the baseline survey of the World Vision LRP project. The survey covered 50 schools distributed across two districts in the province of Nampula. The survey focused on school enrolment, student attendance, beneficiaries of the school feeding project, and the personnel and operational structures in the management of the project, including cooking, procurement committees and school management committees. It also covers farm production and farmers' knowledge and skills in business management, agronomy, marketing and contract management. The main findings from this survey are as follows:

- OFSP is a new crop. Few farmers produce it and it is therefore not commercialized in the markets.
- OFSP has been introduced in 40% of the farmer associations at the time of the baseline.
- Only 10% of the farmer associations are already supplying OFSP to schools.
- Farmers are starting to produce OFSP crop as a result of the demand from the LRP program. They are conscious that it is a nutritive food with a high market price.
- Farmers have been trained in business skills and agricultural techniques and they have some experience in commercial/contractual business processes.
- Most students take only two meals a day at home and, therefore, there is a high demand for the school feeding program.
- The LRP program was reaching more than 900 direct beneficiaries including students, cooks and teachers as at the time of the baseline.
- The number of students who have two meals a day is higher in the treatment schools (288) than in the control schools benefiting from only the ETC2 program (228). This applies also to students who have three meals a day, where the numbers are 104 for the treatment schools and 93 for the control schools.
- Students in both programs received balanced meals that included food from all food groups. In the Nacaroa control schools this was less so than in the other three areas, where more than 75% of the students reported eating food from the four food groups. The sweet, potato, vegetables and fruits food group had the least students (53%) including it in their meals.
- The people working with the program were qualified for their responsibilities. This applies to the cooks and the procurement team members and it means that they have made good contribution to the implementation of the programme. Nevertheless, procurement committees were trained on storage quality and forward contracts.

5. Baseline Questions and Related Findings

The following can be considered as the main results of the basline with reference to the research Questions:

To what extent can locally procured, good quality and culturally appropriate food commodities help to improve the nutrition of students in the target schools?

- More students in the treatment schools had two meals per day (288) than in the control schools (228), which benefitted from only the ETC2 programme. The same trend applied to students who had three meals a day, with fewer children coming from the control schools (93) than the treatment schools (104).
- The students in both programs had balanced meals that included food products from all the food groups. In the Nacaroa control schools this trend was less evident than in the other three areas (Nacaroa and Muecate treatment schools and Muecate control schools), where more than 75% of the students interviewed reported eating from the four food groups. Three food groups that included sweet potato, vegetables and fruits was consumed by the least number of students.
- Limited numbers of students reported being sick in the previous month before the baseline. The students in the two districts did not have many health complaints and only about 28% of them reported to have fallen ill once in the previous month, the highest level for illness shown in the survey

What is the capacity of the farmer groups to produce high quality, nutritious commodities, especially orange-fleshed sweet potato (OFSP), and supply them to the school-feeding program?

- Farmers had been trained in business skills and agricultural techniques by the LRP project before the baseline.
- OFSP had been introduced to 40% of the farmer associations at the time of the baseline.
- Only 10% of the farmer associations were supplying OFSP to schools as at the time of the baseline. However, more than 50% of the procurement committees in the Muecate district confirmed that they received food products from farmer associations.
- World Vision vehicles and human porters were the most common means of transporting food supplies to the schools
- Farmer association had some experience in commercial or contractual business relationships.

What level of capacity do the schools and the government departments have to procure and manage local commodities to supply the school feeding program?

- School Procurement Committees had been trained in storage quality and future contracts by the LRP project at the time of the baseline.
- School Procurement Committees were present in only the treatment schools at the time of the baseline
- Some school procurement committee members had trainings from other NGOs, government departments and other workshops as at the time of the baseline
- Some 69% of the treatment school committees reported that their quality control method for the food products was visual assessment, 62.5% controlled their stores of the products by referring to the delivery notes, while 43.8% did so using a product inventory. The quality control procedures were not implemented in the control schools in either district.

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