

Effective Seed Storage Program

Phase II Baseline



July 2013

Johan van Duijn – Independent Consultant

List of Acronyms

AEZ	Agro-Ecological Zone
Aldeia	Hamlet/Sub-village with a leader, but no council
CRS	Catholic Relief Services
ESS	Effective Seed Storage (program)
FAO	Food and Agriculture Organization (of the United Nations)
FGD	Focus Group Discussion
FHH	Female Headed Household
Ha	Hectare
HH	Household
IFAD	International Fund for Agricultural Development
KG	Kilogram
MAF	Ministry of Agriculture and Fisheries
NGO	Non Government Organization
OFDA	Office of U.S. Foreign Disaster Assistance
PMP	Performance Management Plan
SOL	Seeds Of Life
Suco	Village - Biggest political unit with a development council. Composed of a number of Aldeias
USAID	United States Agency for International Development

List of Contents

List of Acronyms.....	2
List of Contents	3
List of Tables and Figures	4
Acknowledgements	5
Executive Summary.....	6
1. Introduction	8
2. Methodology and limitations	8
2.1 Methodology.....	8
2.2 Limitations	10
3. Household characteristics.....	11
4. Baseline value indicators.....	12
4.1 Increase in # of months of food self-sufficiency.....	13
4.2 Increase in availability of quality seed during planting season	14
4.3 Percentage of beneficiaries reporting decreased post-harvest losses for seeds.....	17
5. Additional information gathered.....	17
5.1 Responsibilities in seed production and storage	17
5.2 Decision making in households.....	20
5.3 Effectiveness storage methods	22
Annex A: Aldeias included in field work	24
Annex B: Household survey template	25
Annex C: Target area: Agro-ecological zones and major cropping systems	32
Annex D: Demographics respondents	33
Annex E: Food insecure HHs and number of months in last 12 months.....	34
Annex F: Sources of Maize seed	36
Annex G: Maize production area and varieties	37
Annex H: Storage methods of maize seeds.....	38
Annex I: Roles in seed production and storage	40
Annex J: Decision making with households	44

List of Tables and Figures

Table 2.1	Number of Interviewed HHs per district	9
Table 3.1	Household characteristics	12
Table 4.1	Maize varieties grown	14
Table 4.2	Quantity of seeds stored for next season	16
Table 4.3	HHs reporting post-harvest seed losses - %	17
Figure 3.1	Educational level HH head	12
Figure 3.2	Land area for maize production (Ha) - % of HHs	12
Figure 4.1	% of food secure HHs per district	13
Figure 4.2	Number of food insecure months in previous 12 months	13
Figure 4.3	% of respondent HHs growing Sele variety	14
Figure 4.4	Post harvest seed losses - % of growing HHs	15
Figure 4.5	Storage methods for maize varieties - % of households growing variety	15
Figure 4.6	Seed sources - % of HHs	16
Figure 5.1	Roles in seed production	18
Figure 5.2	HH member responsible for land preparation	18
Figure 5.3	HH member responsible for seed sowing	18
Figure 5.4	HH member responsible for seed selection	19
Figure 5.5	HH member responsible for seed drying	19
Figure 5.6	HH member responsible for seed storage	19
Figure 5.7	Decision making in the household	20
Figure 5.8	Decision making in the household – Male respondents	21
Figure 5.9	Decision making in the household – Female respondents	21
Figure 5.10	Decision making in the household – FHHs	22
Figure 5.11	Average % of seed loss per storage method	22

Acknowledgements

Wahyu Nugroho	Mercy Corps	<i>Agriculture and Food Security Program Manager</i>
Joanna Walshe	Mercy Corps	<i>Country Director Timor Leste</i>
Clementino Bento	Mercy Corps	<i>ESS program manager</i>
Albino Amaral	Mercy Corps	<i>M&E Officer</i>
Ana Ferreira	Catholic Relief Services	<i>Program manager</i>
Marcelino Pinto	Catholic Relief Services	<i>ESS M&E officer</i>

Executive Summary

The majority of farmers in Timor-Leste rely on subsistence agriculture for their livelihoods, but are challenged by poor seed quality and a lack of effective storage for seed for the majority of farmers in rural Timor-Leste. To address these problems, Mercy Corps has been implementing the USAID/OFDA funded Effective Seed Storage (ESS) in Timor-Leste Program since August 2011. The program was designed to be sustainable through an innovative market-based approach to increase access to improved storage systems linked with capacity building of farmers and extension workers.

The ESS program successfully introduced effective post-harvest seed storage solutions to 3,120 rural farmers in 4 sub-districts of Ainaro and Manufahi. This expansion will target neighboring districts/sub-districts and complement the Seed of Life (SOL) informal seed multiplication program and the International Fund for Agriculture Development (IFAD) grain storage

This baseline survey was conducted from June 26- July 8, 2013. Field data collection was conducted in four district representing the four different Agro-Ecological Zones (AEZ) in Timor Leste. In each of the districts households were randomly selected in 4 *aldeias* (hamlets), with a total of 389 valid survey forms, more than the 380 required as per statistical requirements. During the survey one of the indicators has only been partially assessed due to the wrong question posed and despite receiving training some of the enumerators still found some questions challenging.

The average HH size is 6.2, while the average age of the HH heads was 48.4. A majority of 45% of the HHs grows 0.5-1 ha of maize, with only 17% more than 1 ha.

The baseline collected specifically data for the three indicator. The indicators are in the table below, together with the values identified.

Indicator	Summary
Projected increase in number of months of food self-sufficiency due to seed systems activities/agricultural input for beneficiary households	<ul style="list-style-type: none">• The survey questions looked at food security, not at self-sufficiency• Only data of Covalima available for self-sufficiency. Only 1.7% is self sufficient, with on average a food shortage of 3 months per year• 46.6% of the HHs are food insecure, reporting an average shortage of 0.9 months for all HHs and 2.0 for the ones reporting being food insecure.• Bobonaro comes out as the most food-insecure district• There are big differences between the aldeias in a district• A 30% reduction would mean for Covalima a target of 2.1 months of not being self-sufficient in food production• Data from other districts can be gathered during trainings
Increase in availability of quality seed during planting season	<ul style="list-style-type: none">• 24% of HHs grow Sele variety• 39% of Sele seeds are lost during storage and 45% of other varieties• Storing over the fire place is one of the most popular storage methods

	<ul style="list-style-type: none"> • 25% of Sele seeds is coming from own production, while majority of 69% given by the government and a further 13.5% by NGOs • 75% of other varieties come form own production
Percentage of beneficiaries reporting decreased post-harvest losses for seeds	<ul style="list-style-type: none"> • 93% of Sele growers report losses • 95% report losses of other varieties during storage • Target of 80% reduction is realistic

The survey also collected other relevant information which can be used at the further development of the project, or will be valuable at other stages of project monitoring and evaluation. Some key findings are:

- Male respondents are reporting higher percentage of households making joint decisions with their female household members than female respondents
- Metal storage options are most effective in keeping good seeds, although only a few are reporting that no losses at all. On average metal drums and silo score good.
- When the metal drums are storing seeds for more than one household the seed losses almost double, most likely to be caused by the regular opening of the drum.

1. Introduction

The majority of farmers in Timor-Leste rely on subsistence agriculture for their livelihoods, but are challenged by poor seed. The continuous use of farm saved seed is leading to reduced yields and the lack of appropriate on-farm storage results in a high percentage of post-harvest seed loss (30% in the case of maize¹). These combined problems put seed system security at risk over time. At present effective storage for seed is not available for the majority of farmers in rural Timor-Leste. To address these problems, Mercy Corps has been implementing the USAID/OFDA funded Effective Seed Storage (ESS) in Timor-Leste Program since August 2011. The program was designed to be sustainable through an innovative market-based approach to increase access to improved storage systems linked with capacity building of farmers and extension workers, and through supporting activities to connect farmers with viable input and output markets.

The ESS program successfully introduced effective post-harvest seed storage solutions to 3,120 rural farmers in 4 sub-districts of Ainaro and Manufahi. The evaluation of the program, conducted in January 2013 recorded significant achievements in reducing losses of seeds through the introduced system, and the high acceptance of the storage method by farmers, despite the short application in the field. Based on the success of the program and the continued need for seed system security throughout rural Timor-Leste, Mercy Corps, in partnership with Catholic Relief Services (CRS), is proposing a nation-wide expansion of the current ESS program. The expansion will target neighboring districts/sub-districts where interventions can be easily be scaled up through the currently supported manufacturers. The expansion will complement the Seed of Life (SOL) informal seed multiplication program and the International Fund for Agriculture Development (IFAD) grain storage project by filling critical gaps in the seed system and leveraging greater impact.²

This report continues with Chapter 2 on the survey methodology and limitations, followed by chapter three which looks briefly at characteristics of the respondent households. Chapter four presents the data related to the three indicators to be assessed, While chapter five gives additional information gathered, in particular on the position of women in seed production and decision making.

2. Methodology and limitations

2.1 Methodology

The baseline survey is a quantitative assessment among potential beneficiaries of the project. A household survey template was developed to provide a description of the current situation in the program area for the identified indicators and other relevant information, in particular the role of women in the seed production process and decision making in households. Focus of the program and thus of this survey is maize.

The survey was conducted by teams of enumerators composed of partner Non Government Organization (NGO) staff, with the exception of Liquica, where local students were used. After field testing of the template

¹ http://www.fao.org/emergencies/country_information/list/asia/timorleste/en/

² ESS program proposal to USAID/OFDA, Mercy Corps, 2012.

in Dili, all enumerators received training in administering the questionnaire, after which field teams started the interviews, each field team supervised by at least one Mercy Corps staff member.

The number of interviews was calculated by applying a 5% margin of error, and a confidence level of 95% on a beneficiary number of 40,000. The minimum number of interviews was 381.³

The geographical areas to be covered by the survey have been reduced to minimize logistical needs. An entry point for selecting the areas were the Agro-Ecological Zones (AEZ) in Timor Leste. The survey excluded the coastal areas, leaving four AEZ. A description of the AEZs can be found in Annex B. The districts of Dili and Oecussi are not part of the project, and were therefore excluded from the sample frame.

To comply with the statistical requirement, a target to conduct 100 interviews was set for each of the AEZ, to be more or less equally divided over four aldeias. Female headed households (FHH) are identified as important beneficiaries and their location used as an entry point at community level.

The following steps were followed in household identification:

1. Assess which AEZs were present in the 11 project districts
2. Random selection of which district will be surveyed in which AEZ. Only one AEZ per district was going to be surveyed
3. Identification of which Sucos are falling within the AEZ, and random selection of one among them
4. Random selection of four aldeias to be visited. If already known priority was given to aldeias of which it was known that the project was going to be implemented there
5. In the selected aldeias, first the FHHs were identified with the help of local officials. These would be the starting points for the survey. By not knowing up front where the FHH are living randomness is introduced to the household selection.
6. After interviewing the FHH the nearest households were interviewed until a minimum of 25 survey forms were completed.

The survey was conducted through the administration of a household questionnaire among 406 households, with 389 valid responses. Not all forms were valid since respondents were not maize producers. Table 2.1 gives more detail on the distribution of respondents. The aldeias included in the survey can be found in Annex A. Annex C contains the household questionnaire.

Table 2.1: Number of Interviewed HHs per district

District	AEZ	# of Interviews conducted	Valid Questionnaires	Respondents			
				Male	Female	% Female	%FHH
Bobonaro	Northern Slopes	98	98	54	44	44.9	14.3
Liquica	Northern Highlands	102	98	58	40	40.8	8.2

³ Calculated via the online sample size calculator at http://www.raosoft.com/sample_size.html

Lautem	Southern Slopes	103	97	48	49	50.5	27.8
Covalima	Southern Highlands	103	96	56	40	41.7	18.8
Total		406	389	216	173		
Average		10.5	97.3	54	43.3	44.5	17.3

The average number of FHH is in line with the national average of 16% although a significant variation can be observed between the different districts. While the average of FHH was 17.3%, the percentage of female respondents was much higher with 44.5% of the total.⁴

Lautem district is covered by the project by implementing partner CRS and the survey led by their local partner Together In Development. Also encoding of the information was done by CRS staff while for the other districts it was done by Mercy Corps. Completed forms were checked by the supervisor before entering in a Excel database. The encoding was then once more checked by the program manager, and finally by the consultant. The consultant travelled to Timor Leste to check the questionnaires and encoding after completion of the field work.

2.2 Limitations

The consultant and enumerators faced these limitations during the baseline study:

- In Covalima the initially selected aldeias were not accessible for the enumerators, and the supervisor decided to add more interviews in one of the other aldeias.
- The students in Liquica, despite having gone through the same training as the others, reportedly did not understand well the sections 3 and 5, which are about the roles of men and women. In the responses this could be reflected by having responses that are less diverse than in the other districts.
- Despite the different levels of checks the consultant still observed the following errors:
 - Forms that indicated that farmers only produced Sele varieties, still contained information on other varieties as well. Some information was excluded from the database and consequently the analysis.
 - In the databases still errors could be found. Partially some might have been caused by the template of the database. Most entries require selecting from a drop-down list. It might have happened that the encoder unwillingly made an error, wanted to correct this, but did not have the know-how to do it, and just left the mistake there. It was acknowledged that some people did not know how to make the correction. In the future blank options can be included in the template to allow for corrections by the encoder.

⁴ Census 2010, Timor Leste, National Statistics Directorate, 2010

A special consideration has to be made in regards to the questions included in the survey to answer the first indicator on an increased number of months of self-sufficiency. This has been wrongly assessed with questions that inquire about food security, not just from own production, but also from purchasing. While this provides interesting information and shows in fact a high level of food security as presented in paragraph 4.1 it does not provide directly the information that is required to establish a baseline figure for the period that maize is available for consumption.⁵

To remedy this it is recommended to choose one of the following:

- Given that the baseline communities are preselected for project interventions, use the opportunity of trainings in communities to ask the questions of when harvesting, and how long the harvest provides food for the household. With a simple table format for responses this should not take more than 1-2 minutes per respondent. The consultant can provide a template.
- An equally short way for the enumerators to collect data is to call a meeting with the respondents of the previous survey to provide feedback on the previous survey, and to collect this additional information. Obviously this would require more time from the initial respondents since they need to travel to a central location.

In either of the options, the resulting information can be send to the consultant for analysis and put with this report as an addendum. Alternatively the program management can opt to assess progress only during the evaluation of the project, by using the same questions as in the evaluation conducted in February 2013. This asked retroactively whether there is a change in number of months of availability, and if yes, how many months. In addition attribution of the increased availability was asked.

The enumerators in Covalima did collect data on food availability by own production, and is still visible on the forms even after putting new info on food security. The information is presented in paragraph 4.1.

3. Household characteristics

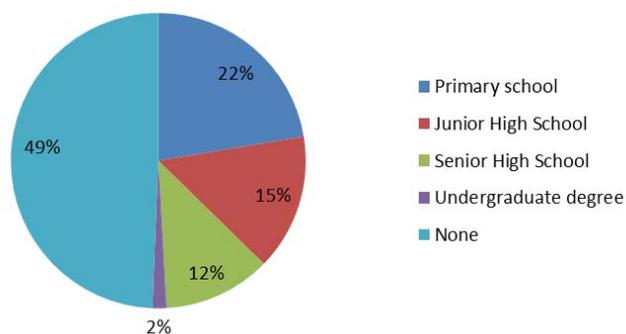
The average household size varied between the districts from 5.91 in Covalima, up to 6.75 members in Liquica, but in all they areas they are higher than the average as per Census 2011 of 5.77 persons per household. Similarly also the number of families reporting having members with disabilities is higher than the 4.6 reported in the Census of 2010. This could however be due to the inclusion of chronically ill in this survey. See more information on demographics in Table. 3.1.

⁵ Note that food preferences are often different and most household prefer rice. This might lead to households reporting less availability than the harvest would last, due to selling or bartering maize for rice.

Table 3.1: Household characteristics

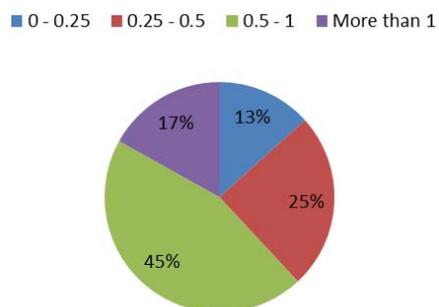
District	AEZ	Average HH size	Average age HH head	% HH head married	%HH head widowed	% HH with disabled, chronically ill etc
Bobonaro (N=98)	Northern Slopes	6.20	51.8	83	13	8.1
Liquica (N=98)	Northern Highlands	6.75	46.4	86	12	22.4
Lautem (N=97)	Southern Slopes	6.06	46.0	79	18	13.5
Covalima (N=96)	Southern Highlands	5.91	49.3	69	25	10.1
Average		6.2	48.4	79	17	13.5

Figure 3.1: Educational level HH head



The majority of the HH heads, 49% did not receive any education, the second biggest group of 22% completed primary school. Only 2% completed a degree.

Figure 3.2: Land area for maize production (Ha) - % of HHs



The focus of the project is on improving seed storage, and in particular that of maize. All the data presented in this report is from households that produce maize. The survey collected data on the area that households are cultivating with maize. Often different varieties are planted in different small plots. The respondents were asked to estimate the total area they planted the last season. Figure 3.2 gives the averages for all respondents. The majority of the farmers, 45%, grow between 0.5-1 hectare of maize, and only 17% grow more than one hectare.

4.1 Increase in # of months of food self-sufficiency

The complete indicator to assess is: *Increase in # of months of food self-sufficiency due to seed systems activities/agricultural input for beneficiary households*. This is an indicator of the Office of Foreign Disaster Assistance (OFDA). Unfortunately the questions posed to the respondents were not looking at self-sufficiency, but more at food security. This paragraph presents a summary of the responses. Partial data is provided from Covalima district where information on self-sufficiency was recorded. This needs to be seen as indicative data since there might have been corrections in that data that can not be observed anymore.

The respondents were asked: ‘In the past 12 months, were there any months during which your household did not have food to meet your family needs?’ If the answer was yes they were asked to provide which months those were.

Figure 4.1 gives the percentage of households that are reporting that they are food insecure, by stating that they had at least one month in the last 12 months not sufficient food to feed their family. The average is also provided, with 46.6% of the surveyed households reporting being food-insecure. Lautem reportedly has the highest food security with 67.3%. For illustrational purposes the responses of Covalima on the food self-sufficiency is included. In contrast with the 52.5% of households in Covalima being food-insecure, a much higher 98.3% is not producing enough food from their own production.

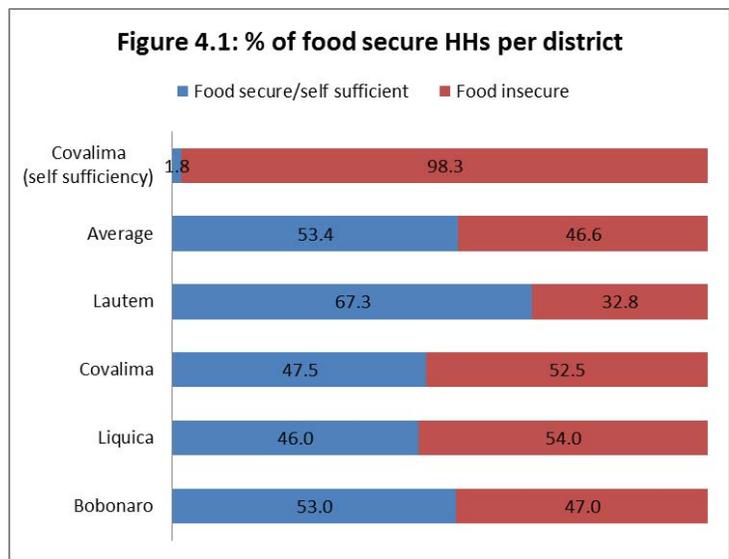
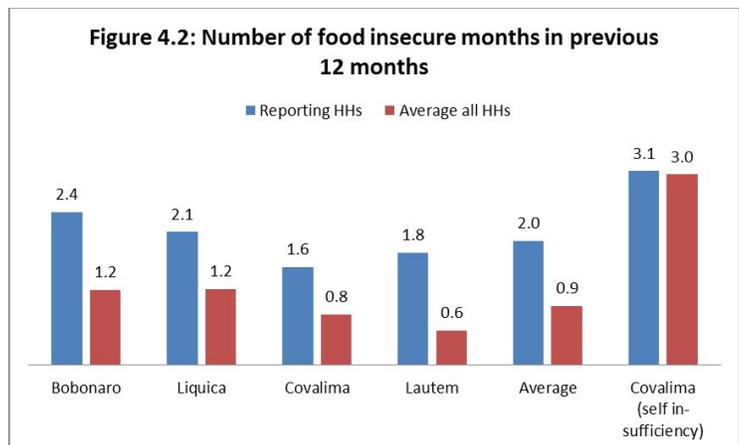


Figure 4.2 looks at the number of months that households report that they do not have enough food. For each of the districts two columns is provided. One for the average from the HHs that report food shortage, and a second on the average over all the respondents. Interesting to note is that Bobonaro does not have the highest percentage of food insecure HHs as per Figure 4.1, but the ones that are, report a higher number of food insecure months.

Data has been analysed separately for male and female headed households, but there are no significant difference to be seen in terms of food insecurity. Percentages for FHHs are around the same as of the total sample. The analysis, however, does show that there is a difference between the four aldeias covered by the survey. For example in Lautem, Solepara



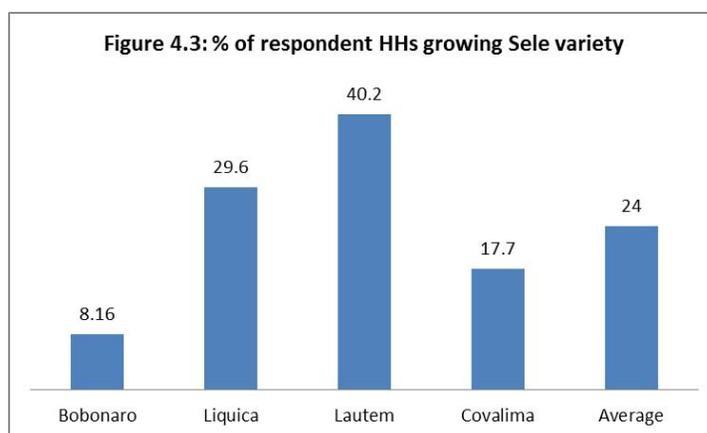
reports an average of 3 food insecure months, while Chai aldeia only one. In Liquica district, Caibair aldeia only has 24% food insecure HHs, while in Fatuniso 82%. See for summary tables Annex E.

4.2 Increase in availability of quality seed during planting season

The PMP does not provide a target for this indicator. To define baseline information, this survey looked at three aspects:

1. The percentage of households growing Sele, as one of the quality varieties in terms of production levels
2. The percentage of seeds that are surviving the storage period in between production seasons.
3. The sources of Sele seeds and other varieties, to reflect on the ease of availability of seeds to farmers

Information has been gathered for Sele variety, and all other planted maize varieties together. Sele was separated since it is the variety promoted by Ministry of Agriculture and Fisheries (MAF) as a result from intensive research under SOL. As can be seen in Figure 4.3, only 24% of the respondents plant Sele, Bobonaro with the lowest of 8.16% and Lautem with just over 40%,



Other varieties grown by the surveyed households are presented in Table 4.1.

Table 4.1: Maize varieties grown

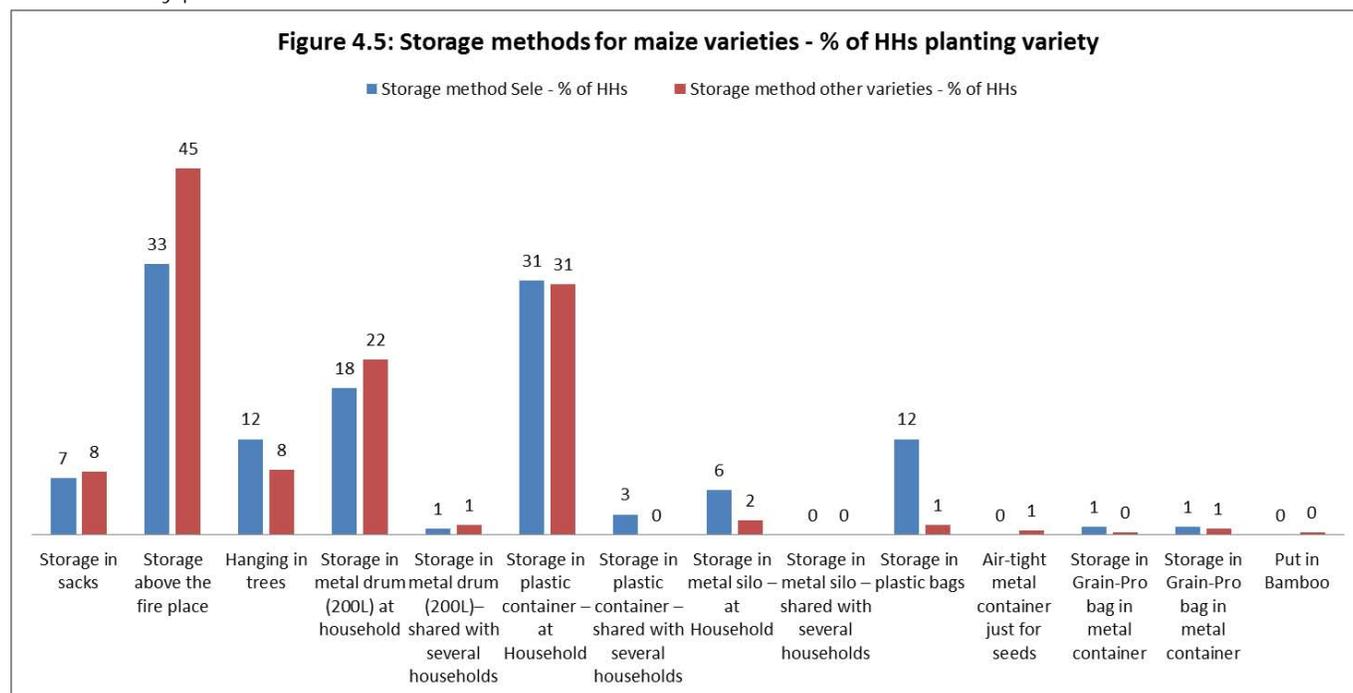
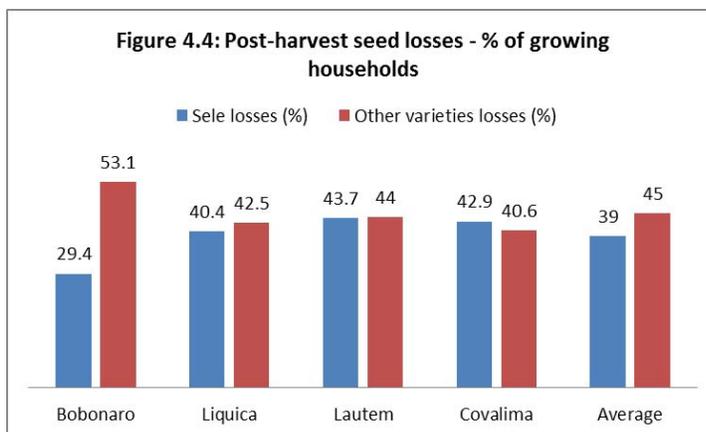
	Batar lais	Batar bo'ot	Suwan 5	Arjuna	Kalinga	Batar Mutin	Sele
Bobonaro	38.8%	82.7%	0.0%	1.0%	0.0%	2.0%	8.2%
Liquica	28.4%	51.6%	2.1%	13.7%	42.1%	1.1%	29.6%
Lautem	24.0%	83.3%	0.0%	28.1%	0.0%	2.1%	40.2%
Covalima	19.8%	96.9%	0.0%	13.5%	1.0%	2.1%	17.7%
Average	27.7%	78.6%	0.5%	14.1%	10.8%	1.8%	23.9%

The most popular variety planted is Batar bo'ot with 78,6%, and is the most important variety in the districts, except in Liquica, where farmers favour the Kalinga variety. This is hardly grown in the other districts.

Figure 4.4 provides insight in what the losses in seed are from harvest time to the next planting season. ON average this is 39% for Sele seeds, and 45% of other varieties. This data underlines the importance of the introduction of appropriate seed storage technology to prevent seed losses, and more importantly to ensure continuous availability of the Sele variety. Much of the effort in researching and introducing improved varieties can be lost if no proper seed storage is available.

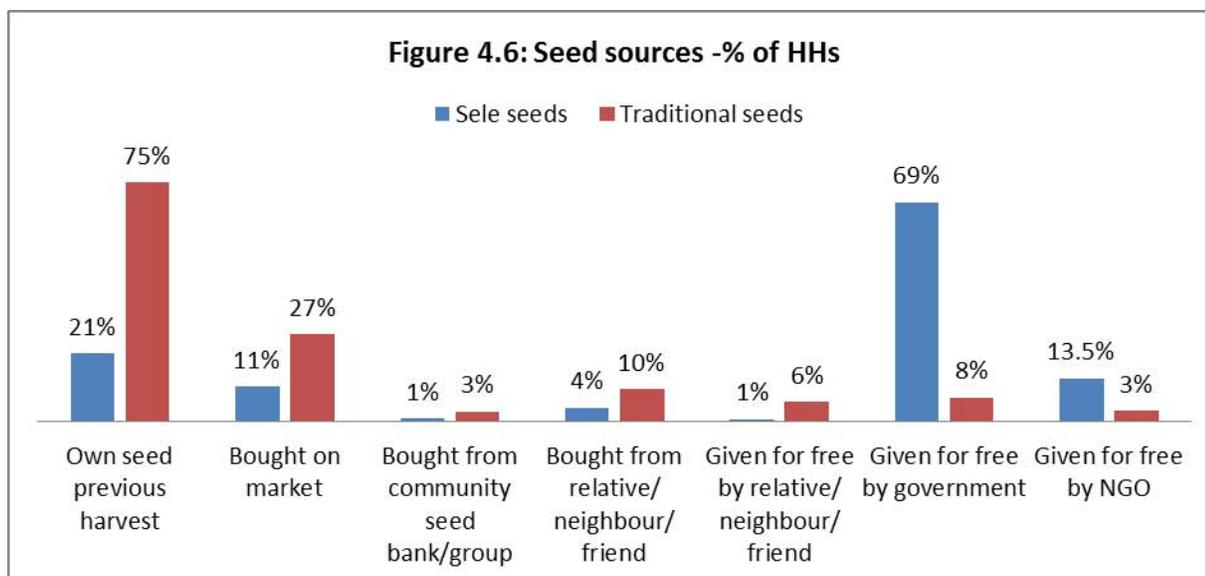
Figure 4.5 further explores this. It provides in percentages of HHs that are using a certain storage method. Data has been collected for Sele, and for the remaining varieties. Sele is a variety with a high production, but it is also more susceptible to weevils, and therefore needs good protection to ensure seed availability.

The most popular storage methods are storing above the fire place, often in bundles of cobs, followed by plastic containers at household level, in particular jerrycans and bottles, and storing the seeds in a metal drum. Interesting to note is that Sele is stored less above a fire place, and the difference with other varieties can be compensated with the percentage of HHs that store it in plastic bags. Note however that households were allowed to report different storage methods they practice.



Sele variety is in Bobonaro and Liquica districts mainly stored above the fireplace, while in Lautem people favour drums. Other varieties, however, the respondents in Lautem store above the fireplace, while the people in Liquica seem to prefer to store these in drums. Covalima equally prefers to store all varieties in plastic containers. The preferences could well be reflecting previous projects that promoted certain storage types. More information can be found in Annex H.

An increase in availability of improved seeds, in particular Sele can also be assessed by looking at the sources of seeds. Figure 4.6 provides the most important sources of Sele and other seeds. Tables with data per district can be found in Annex F.



The most common source of seeds for the traditional varieties is from the own production, followed by buying on the market. For Sele, most people have been given seeds by the government and NGOs to plant on their farm. A number of HHs report buying Sele seeds on the market or from relative and neighbours, indicating that there is a growing interest of farmers in the variety, shown by their willingness to pay for the improved seeds. It must however also be noted that most farmers are unlikely to replace all their land to Sele. Most farmers spread the maize varieties over different plots of land. For the HHs that cultivate Sele, they do this on average on only 51% of their maize land, the rest dedicated to one or more other varieties. More details on this in Annex G.

An additional factor that can indicate an increase in availability is the volume of seeds that is stored. In combination with the percentage of losses, this gives the available amount of seeds at the next planting season. Table 4.2 gives the quantity of seeds stored for next planting season. From some respondents answers had to be converted to Kilograms. One Tali (bundle) was converted to 2kg, while 10 liter an equivalent of 9kg.

Table 4.2: Quantity of seeds stored for next season

District	Sele (Kg)				Other varieties (Kg)			
	N	Average	Minimum	Maximum	N	Average	Minimum	Maximum
Bobonaro	8	8.0	43.1	10.0	98	24.6	1.5	100.0
Liquica	29	29.0	19.1	5.0	94	27.2	2.0	120.0
Covalima	39	39.0	15.4	0.3	97	14.3	0.3	50.0
Lautem	17	17.0	19.2	4.5	96	19.3	4.0	50.0
Average		23.3	24.2	4.9		21.3	1.9	80.0

At time of program evaluation caution need to be taken to not simply look at quantities stored. It will be important to look especially at whether people are storing less seed because of having a more reliable seed storage system that reduces loss, hence reducing the required volume of seed stored.

4.3 Percentage of beneficiaries reporting decreased post-harvest losses for seeds

The target set in the PMP is 80%. During an evaluation achievement of the indicator could simply be assessed by asking the sample of beneficiaries whether they experienced a decrease, and respondent can answer positively or negatively. To substantiate this a bit more, one can look at two factors. The first is the number of HHs that have report losses now. For all varieties of maize this is more than 90% as can be seen in Table 4.3 below.

Table 4.3: HHs reporting post-harvest seed losses - %

	Bobonaro	Liquica	Lautem	Covalima	Average
Sele variety	87.5	96.4	94.9	94.1	93
Other varieties	99	90.5	97.9	91.7	95

The other factor is identifying by how much the losses have been reduced. This can be done by using the data already presented in paragraph 4.3. Figure 4.4 provides a percentage of losses of more than 40%. Given the bad situation, an improvement by 80% should be within reach.

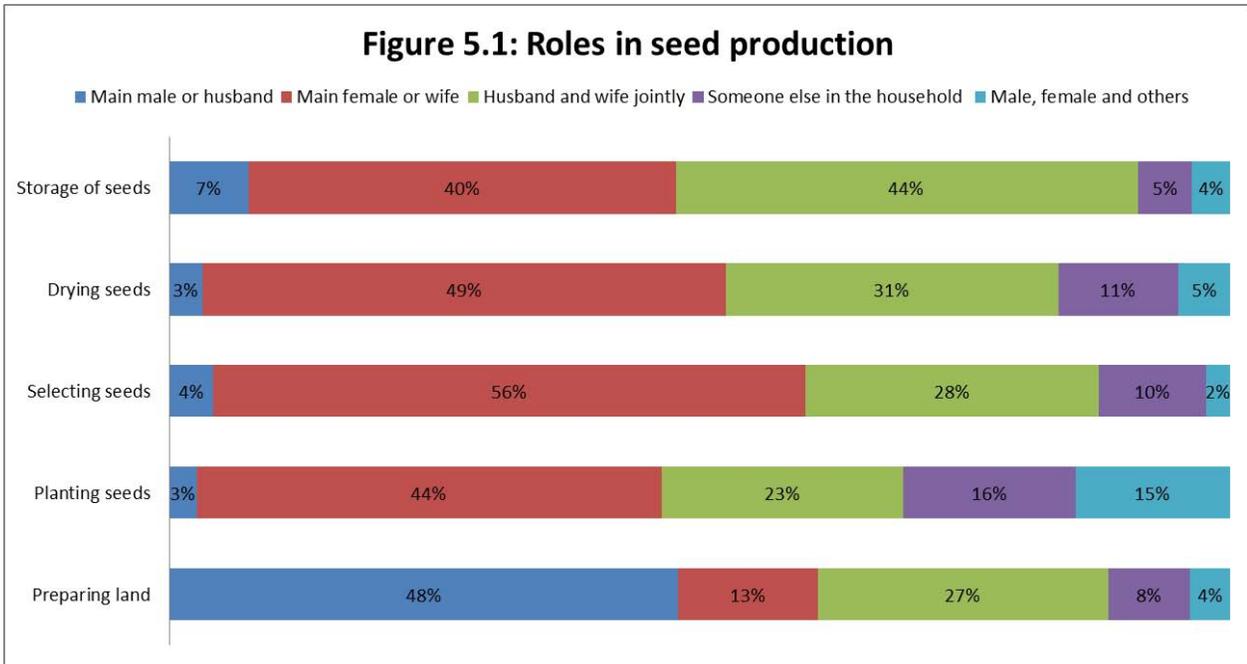
5. Additional information gathered

5.1 Responsibilities in seed production and storage

The program proposal states: ‘Over the duration of the project there will be a concerted effort to increase **women participation in leadership roles and encouraging joint decision making between men and women.**’

While there is no indicator in the PMP to look at changes in decision making and ownership, the baseline has gathered data on two areas to be able to measure changes at the end of the project. One is who is responsible for activities in seed production, for which data is presented in this paragraph, and secondly who is making decisions in HHs. The responses of this are in paragraph 5.2.

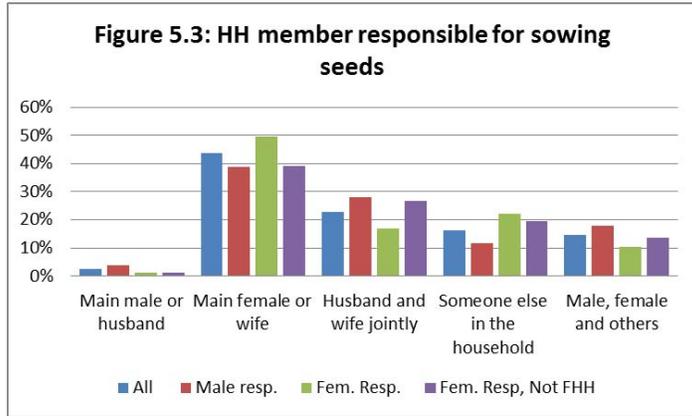
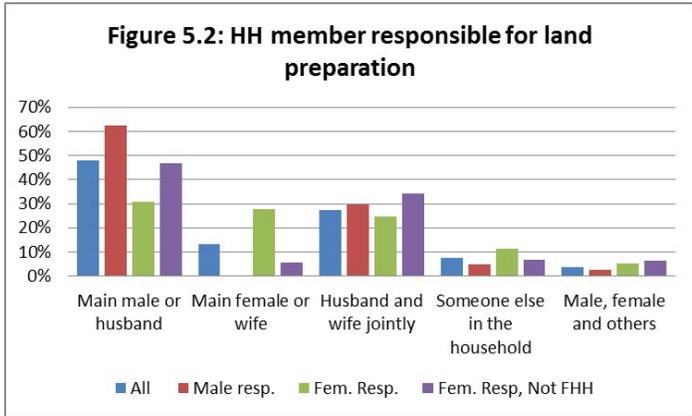
Figure 5.1 provides a summary from all the HH interviews in the four districts.

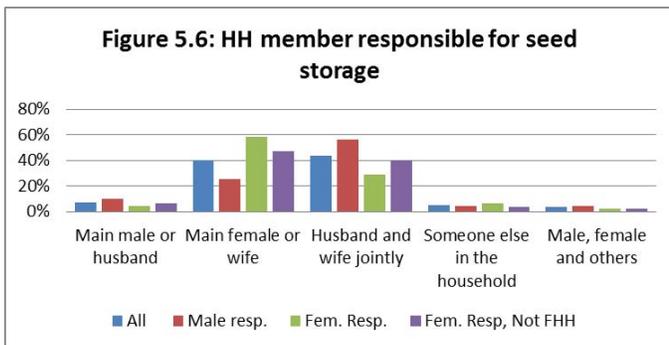
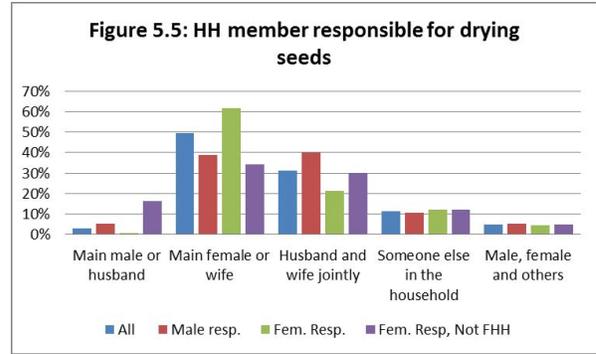
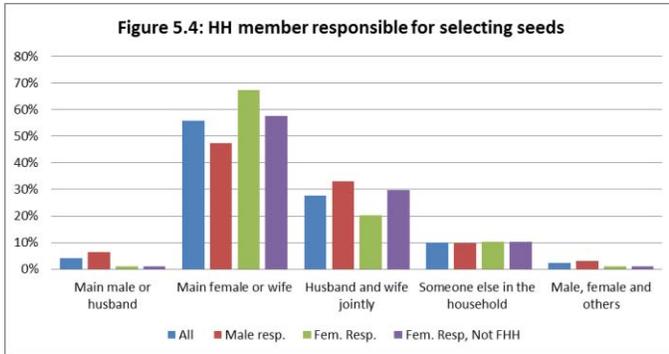


The Figure clearly shows that land preparation is a task mainly undertaken by the men in the household, while the seeding and production and storage of new seeds is more the responsibility of women. In most cases it outnumbers the percentage of HHs reporting that men and women do it together.

If one looks at the data per district it is interesting to note that Liquica scores in all categories higher for men and women working together than the average for all of the districts. The questionnaires show in the other districts more variety in the responses. For the complete information see Annex I.

The Figures 5.2 up to 5.6 below illustrate the responses when the data is segregated for different groups. It compares the average of all respondents with those of male respondents, female respondents, and female respondents reduced with the FHHs. The latter aims to remove the bias of FHH towards responding that women having a higher responsibility.



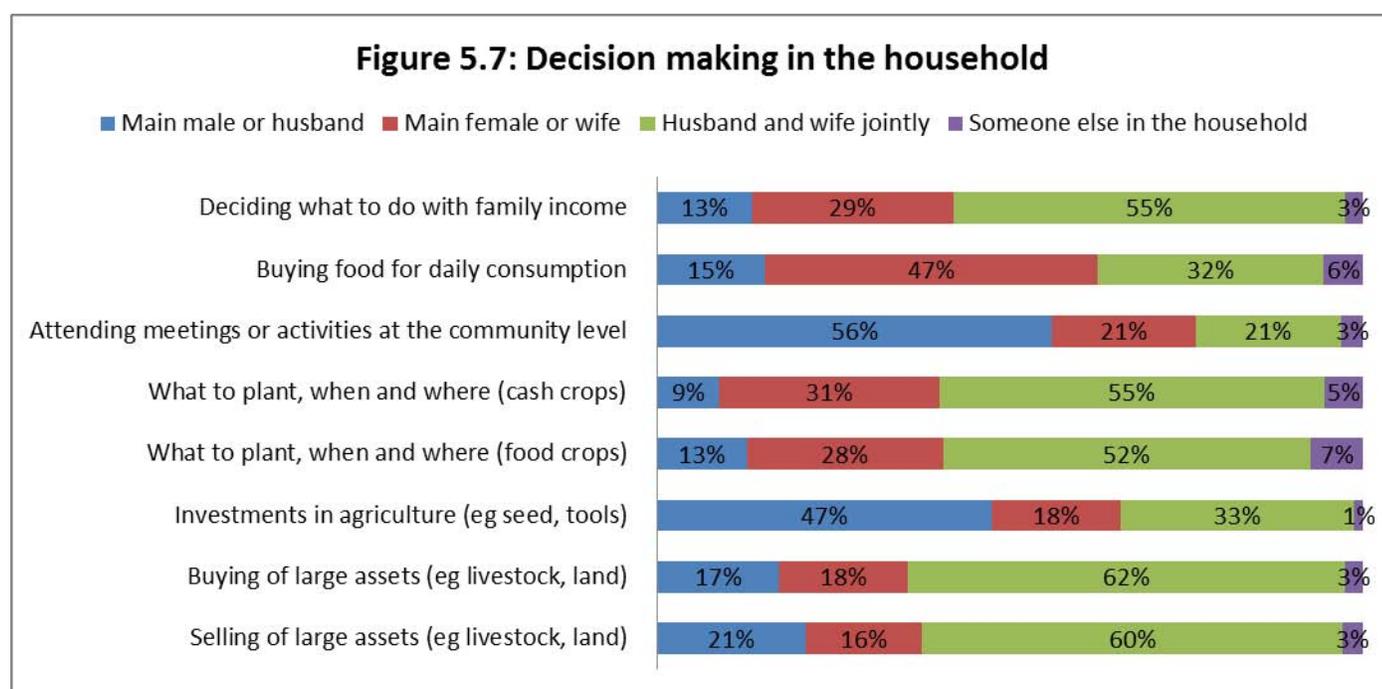


The following can be observed from the figures:

- All groups agree that men are the main responsible for land preparation
- The differences in responsibility for land preparation between all female respondents and without the FHH suggest that FHH are influencing the information. This can also be seen in other activities, with female respondents consistently reporting higher than when the FHH are removed.
- In all respondent groups a higher percentage sees women having main responsibility over planting seeds, and selecting and drying seeds.
- Storing of seeds is seen as a more joint activity than the other seed related activities where women are scoring higher. Yet, it can be seen that more women see it as their responsibility, while men think it is a joint effort.

5.2 Decision making in households

This paragraph looks at the responses on questions in regard to who is making important decisions in the household. Figure 5.7 summarizes responses from all respondents.



Observations that can be made from the figure 5.7:

- In more than half of the households it is the men that attend meetings, while only 21% for women. This could be all the FHHs, although figure 5.10 seems to disagree with this.
- Similarly men are more making the decisions in terms of investing in agriculture when it comes to small expenditures for seeds and tools. When it comes to bigger assets both men and women are involved in more than 60% of the households, in line also with the high percentage of joint decision making on how to use income.
- Decision regarding agriculture are in majority of the households made jointly.

Figures 5.8 and 5.9 below segregate information provided by male and female respondents respectively.

Figure 5.8: Decision making in the household - Male respondents

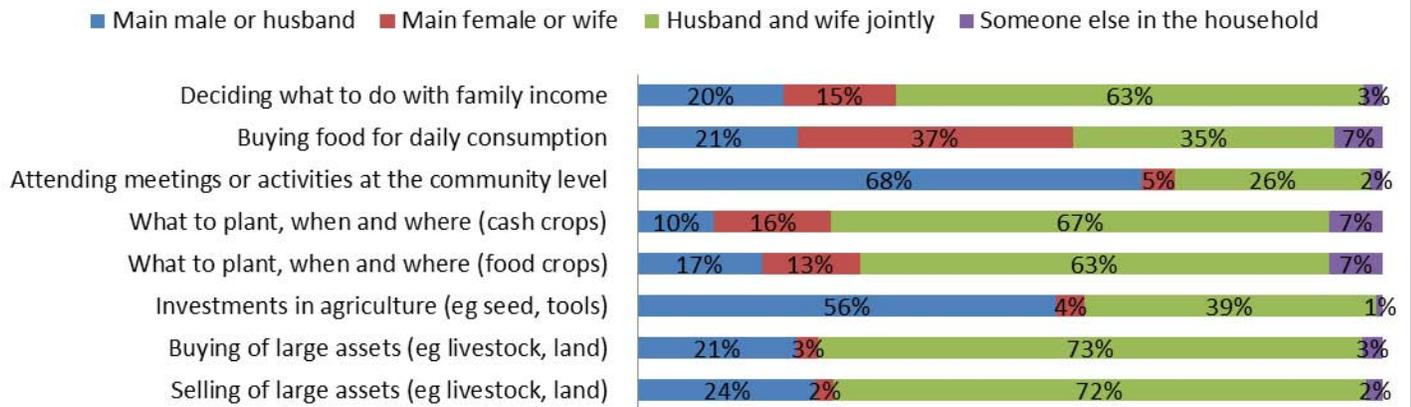
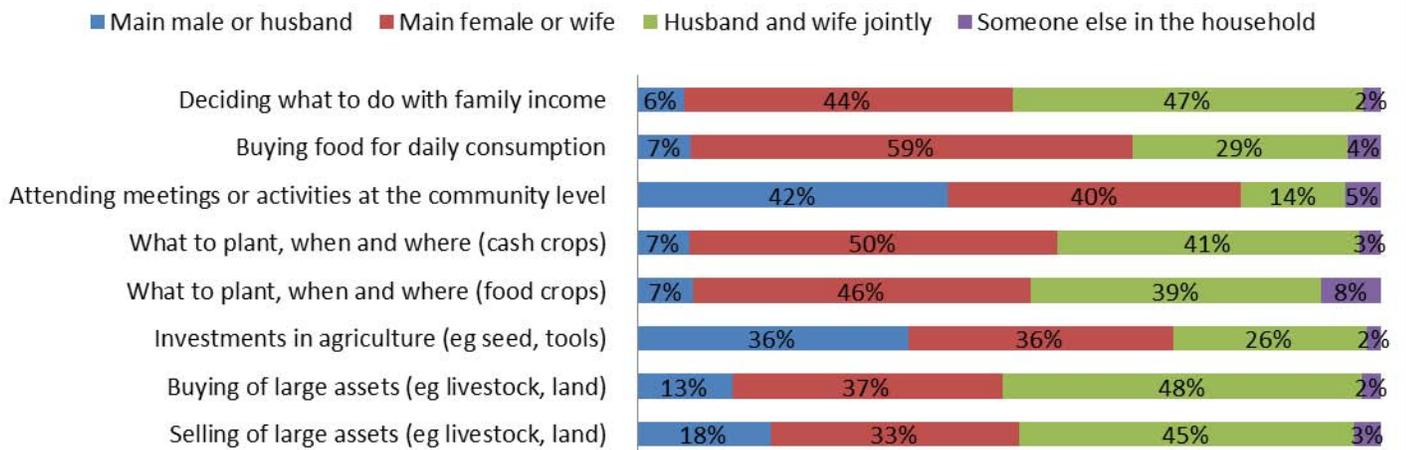
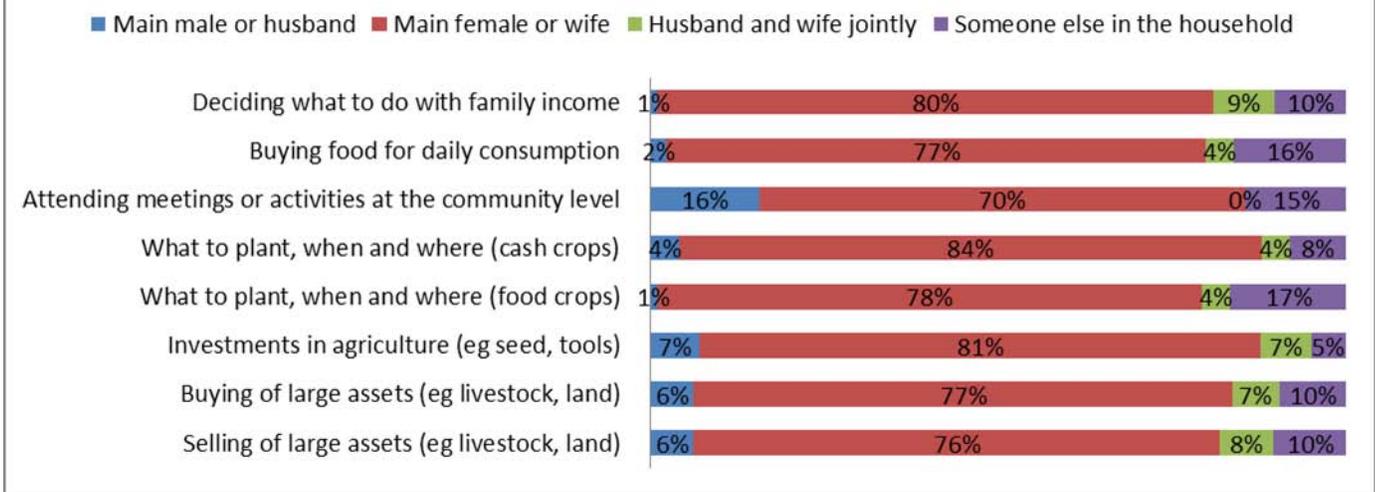


Figure 5.9: Decision making in the household - Female respondents



Figures 5.8 and 5.9 show significant differences in the perspective between men and women on decision making within the household. Men are reporting much more joint decision making than women do. Many female respondents say that women make decisions for the key items in more than 40% of the households. This is most likely influenced by the FHHs. Figure 5.10 supports this; the main female making most decisions for all of the items. It is interesting to think that it is on average only around 80% with in the remaining HHS decisions still being made by other household members.

Figure 5.10: Decision making in the household - FHHs



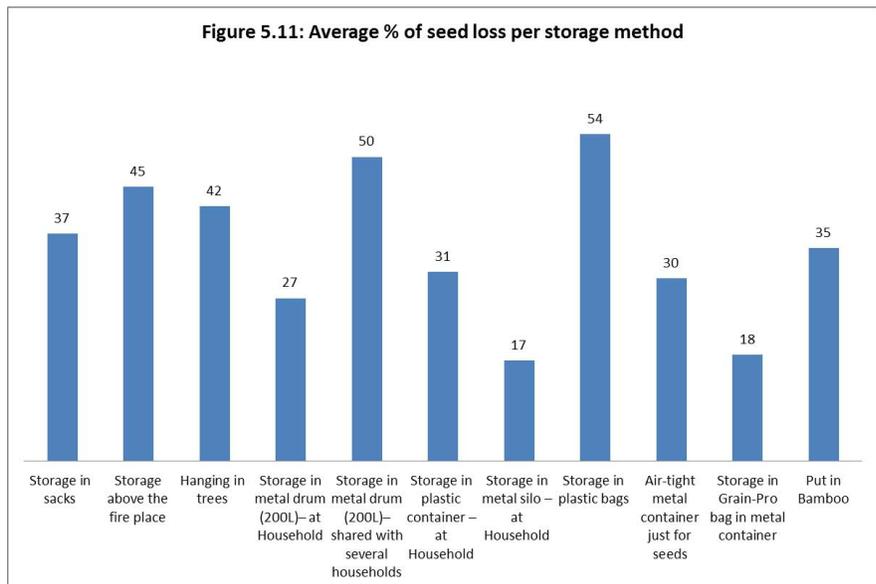
More data on decision, including per district, can be found in Annex J.

5.3 Effectiveness storage methods

The PMP does not prescribe indicators that require looking at the effectiveness of the different storage methods used. The survey however collected information on which storage methods households use, in order to see changes in the future, the adoption of methods introduced by the project.

In combination with the information gathered on the post-harvest seed losses, an assessment can be made on effectiveness of the different methods. Figure 5.11 presents all the different methods of seed storage used by the respondents. Looking at the data one has to realize the following:

- The number of respondents are not the same for each of the methods. For example storing in bamboo was only reported by 1 person, hence the ‘average’ of losses only from one person.
- The averages presented are only for households that reported only one storage method, so the losses could be attributed to that particular method
- For this analysis data for the ‘other varieties’ has been used, excluding Sele. This set was chosen since it has a much higher number



of respondents, providing more reliable information.

Figure 5.11 provides the following observations:

- The survey confirms the methods with highest effectiveness like metal drums, silos and grain-pro bag in a metal container. At the same time the air-tight metal container does have high seed losses.
- There are respondents that report that they store seeds separately in drums. However, at the same time, many of them report that they store less than the 180kg required to fill a drum. Therefore the data on storage of seeds completely separate in drums can be questioned. That there are still high losses with metal drums illustrates this. It is likely that the drums are being opened regularly to take out food.
- Losses are even higher with metal drums that are used by several households. Reportedly 50% of the grain is not good to use for seeds.
- The graph supports that there is a need for effective seed storage methods as to be promoted by the program.

Annex A: Aldeias included in field work

District: Bobonaro AEZ: Northern slopes	Suko	Aldeia	# of interviews
	Holsa	Bili Cou	23
		Solo Golo	25
	Meligo	Bereleo	24
		Mude	24
District: Liquica AEZ: Northern Highlands	Suko	Aldeia	# of interviews
	Fahilebo	Fatuniso	22
		Tuhilo Craik	27
	Vatuboro	Caibair	25
		Talamalobo	24
District: Lautem AEZ: Southern Highlands	Suko	Aldeia	# of interviews
	Lore I	Paihira	23
		Solepara	26
	Cacavem	Chai	25
		Maluro	23
District: Covalima AEZ: Southern slopes	Suko	Aldeia	# of interviews
	Raimea	Beilaco	14
		Webaba	28
	Matai	Cunain	23
		Fatuk Oan	31

Annex B: Household survey template



Effective Seed Storage –Baseline Survey

Instructions for surveyor

“Hello, my name is _____. I am conducting a household survey for the NGOs Mercy Corps and CRS for a project to improve the storage of seeds and helping farmers to increase food production. We are collecting information from households in order to assess what the current situation is to inform the project design and in measure future progress.

Your household has been randomly selected for our study. Would it be possible for me to interview the head of the household? This interview will take about 30-45 minutes.”

Identification info		Response		
Household ID		_ _		
Name of Respondent				
Sex of Respondent (please circle one)		Male1 Female2		
District				
Sub-district				
Suko				
Aldeia				
	Interviewer		Supervisor	
Name				
Signature				
Date	Day	Month	Year	

SECTION 1: HOUSEHOLD INFO			
No	Question	Response and coding	Skip to
101	What is the sex of the head of household?? (please circle one)	Male1 Female2	
102	What is the age of the head of household?	
103	Marital status of the head of household (please circle one)	Married1 Divorced/separated2 Widowed3 Was never married4	
104	Education of the head of household? (please circle one)	Primary School1 Junior High school2 Senior High school3 Undergraduate degree ..4 None5 Other; please specify: _____	
105	Total number of people in the HH		
106	How many members are 14 years old or less?		
107	How many members are from 15 up to 24 and years old?		
108	How many members are between 24 and 60 years old?		
109	How many members are 60 years old or more?		
110	How many of the adults in the HH between ages of 14 and 60 are unable to work? (disability, long term illness, chronically ill, etc.)		
111	Do you support a family member/household member with a disability?	0=no, 1=yes	

SECTION 2: SEED VARIETY AND STORAGE

No	QUESTION	ANSWER	SKIP
201	Do you produce maize?	Yes1 No2	If no finish interview

202 <input checked="" type="checkbox"/>	Combining all the parcels what is the estimated area you usually plant with maize per cropping season?	1	0 – 0.25 ha	
		2	0.25 – 0.5 ha	
		3	0.5 – 1 ha	
		4	Bigger than 1 ha	

203	Do you plant the Sele variety promoted by MAF and Seeds of Life?	Yes1 No2	No → skip to 210
-----	--	-------------------------	------------------

204	What is the portion of land you plant with Sele variety and and what part with other/traditional varieties?	1	Sele	
	Give the farmer 20 beans and let them divide the 20 over Traditional and Sele variety . Write down both of them to the right. Total of the two should be 20!	2	Other/ Traditional	

205 <input checked="" type="checkbox"/>	The last time you planted Sele seeds where did you get your seeds from? Multiple answers possible	1	Own seed from previous harvest	
		2	Bought on market	
		3	Bought from community seed bank/ group	
		4	Bought from relative/neighbour/friend	
		5	Given for free by relative/neighbour/friend	
		6	Given for free by the Government	
		7	Given for free by an NGO	
		8	Given for free by the Church	
		9	Other: (Specify)	

206	Do you store the seed separate from food grain?	Yes1 No2	
-----	---	-------------------------	--

207	After harvesting, how many kg of seeds of Sele variety do you keep for the next season?kg Other:
-----	---	-------------------------

208 <input checked="" type="checkbox"/>	How do you store the Sele seeds? Multiple answers possible	1	Storage in sacks	
		2	Storage above the fire place	
		3	Hanging in trees	
		4	Storage in metal drum (200L) – at Household	
		5	Storage in metal drum (200L)– shared with several households	
		6	Storage in plastic container – at Household	
		7	Storage in plastic container – shared with several households	
		8	Storage in metal silo – at Household	
		9	Storage in metal silo – shared with several households	
		10	Storage in plastic bags	
		11	Air-tight metal container just for seeds	
		12	Storage in Grain-Pro bag	
		13	Storage in Grain-Pro bag in metal container	
		14	Other: Please specify: 	

209	Of the amount of seed you stored last time, what portion could you still use to plant and what part has gone bad by rotting, weevils, or any other pests and diseases? Give the farmer 20 beans and let them divide the 20 over good and bad. Write down both of them to the right. Total of the two should be 20!	1	Good seeds	
		2	Bad seeds	

210 <input checked="" type="checkbox"/>	Which of the varieties here are you growing? Tick the appropriate boxes.	1	Batar lais	
		2	Batar bo'ot	
		3	Suwan 5	
		4	Arjuna	
		5	Kalinga	
		6	Other, specify	
211 <input checked="" type="checkbox"/>	The last time you planted maize, where did you get the seeds for the varieties in Q210 from?	1	Own seed from previous harvest	
		2	Bought on market	

	Multiple answers possible	3	Bought from community seed bank/ group	
		4	Bought from relative/neighbour/friend	
		5	Given for free by relative/neighbour/friend	
		6	Given for free by the Government	
		7	Given for free by an NGO	
		8	Given for free by the Church	
		9	Other: (Specify)	

212	Do you store the seed separate from food grain?	Yes1 No2	
------------	---	-------------------------	--

213	After harvesting, how many kg of seeds of these varieties do you keep for the next season?kg Other
------------	--	------------------------

214	<input checked="" type="checkbox"/> Multiple answers possible	1	Storage in sacks	
		2	Storage above the fire place	
		3	Hanging in trees	
		4	Storage in metal drum (200L)– at Household	
		5	Storage in metal drum (200L)– shared with several households	
		6	Storage in plastic container – at Household	
		7	Storage in plastic container – shared with several households	
		8	Storage in metal silo – at Household	
		9	Storage in metal silo – shared with several households	
		10	Storage in plastic bags	
		11	Air-tight metal container just for seeds	
		12	Storage in Grain-Pro bag	
		13	Storage in Grain-Pro bag in metal container	
		14	Other: Please specify:	

215	Of the amount of seed you stored last time, what portion could you still use to plant and what part has gone bad by rotting, weevils, or any other pests and diseases Give the farmer 20 beans and let them divide the 20 over good and bad. Write down both of them to the right. Total of the two should be 20!	1	Good seeds	
		2	Bad seeds	

SECTION 3: SEED AND RESPONSIBILITIES

Ask Question: Who in the household responsible for..... [PHRASE BELOW]		1 = main male or husband (including widow) 2= main female or wife (including widow) 3=husband and wife jointly 4= someone else in the household
301	Preparing the land for planting	
302	Planting seeds	
303	Selecting the seeds for next planting season	
304	Drying seeds	
305	Storing seeds – Looking after stored seeds	

401	In the past 12 months, were there any months during which your household did not have food to meet your family needs?	YES..... 1 NO..... 2	No → Skip to 5.1
-----	---	-------------------------	------------------

402	<p>If the answer to 401 is YES, which months did your household not have food to meet your family needs?</p> <p>Note: Also from buying, not only from own production.</p> <p>DO NOT READ THE LIST OF MONTHS.</p> <p>WORKING BACKWARD FROM THE CURRENT MONTH, TICK THE BOX IF THE RESPONDENT IDENTIFIES THAT MONTH AS ONE IN WHICH THE HOUSEHOLD DID NOT HAVE ENOUGH FOOD TO MEET THEIR NEEDS.</p>											
	June	May	April	March	Feb	January	Dec	Nov	Oct	Sept	Aug	July

403	Enumerator: Please count the number of months indicated in 402	Number:
-----	--	----------------------

SECTION 5: DECISION MAKING WITHIN THE HOUSEHOLD

Question: Who in your household has the final say on the following: [GIVER PHRASE BELOW]		1 = main male or husband 2= main female or wife 3=husband and wife jointly 4= someone else in the household
501	Selling of large assets (eg livestock, land, coffee)	
502	Buying of large assets (eg livestock, land)	
503	Investments in agriculture (eg seed, tools)	
504	What to plant, when and where (food crops)	
505	What to plant, when and where (cash crops)	
506	Attending meetings or activities at the community	
507	Buying food for daily consumption	
508	Deciding what to do with family income	

End of Survey

Thank the respondent for their time.

Annex C: Target area: Agro-ecological zones and major cropping systems

Agro-ecological zone	Zone description and cropping systems
Northern slopes	<p>Northern hills between 100 and 500 m asl (mean annual rainfall of 1000–1500 mm, five to six month wet season, October to March)</p> <ul style="list-style-type: none"> • Rice-rice (in irrigated areas, e.g. Baucau) • Maize followed by cassava, sweet potato or pumpkins • Mixed crops of maize, cassava, long beans, pigeon pea, peanuts, sweet potato, pumpkins • Peanut then fallow
Northern highlands	<p>Northern Highlands — Northern hills and mountains above 500 m asl (mean annual rainfall >1500 mm, six to seven month wet season, October to April)</p> <ul style="list-style-type: none"> • Rice-rice or rice-fallow depending on source of water • Maize then fallow • Maize followed by cassava or sweet potato • Mixed crops of maize, cassava, sweet potato, taro, beans, pumpkins • Red beans + white beans then fallow • Peanut then fallow
Southern slopes	<p>Southern hills between 100 and 500 m asl (mean annual rainfall 1500–2000 mm; eight month wet season, November to April; May to July)</p> <ul style="list-style-type: none"> • Maize then fallow • Red beans + white beans (sometimes with maize) then fallow • Maize followed by red beans + white beans • Maize or beans followed by upland rice followed by mungbean • Maize + cassava or maize + sweet potato • Upland rice + cassava or sweet potato
Southern highlands	<p>Southern hills and mountains above 500 m asl (mean annual rainfall >2000 mm, nine month wet season, November to April; May to July)</p> <ul style="list-style-type: none"> • Maize then fallow • Red beans + white beans then fallow • Maize followed by red beans + white beans • Red beans + white beans followed by another bean crop • Maize + cassava or maize + sweet potato

Sources: de sa Benevides (2003); FAO (2010)

Annex D: Demographics respondents

Marital status HH head

	Bobonaro	Liquica	Lautem	Covalima	Average
Married	83%	79%	69%	86%	79%
Divorced/separated	3%	3%	4%	0%	3%
Widowed	14%	18%	25%	12%	17%
Was never married	0%	0%	2%	2%	1%

Highest Educational achievement HH head

	Bobonaro	Liquica	Lautem	Covalima	Average
Primary school	16%	22%	30%	21%	22%
Junior High School	8%	19%	15%	17%	15%
Senior High School	13%	15%	6%	13%	12%
Undergraduate degree	4%	1%	1%	0%	2%
None	58%	42%	47%	50%	49%

Annex E: Food insecure HHs and number of months in last 12 months

District: Bobonaro AEZ: Northern slopes			Food Secure HHs		# of HHs with food insecure months					Average # of food insecure months	
Suko	Aldeia	# of interviews	#	%	FHH	% of FHH	MHH	Ttl	%	Reporting HHs	All HHs
Holsa	Bili Cou	23	16	64	4	67	5	9	36	1.89	0.68
	Solo Golo	25	8	32	2	67	15	17	68	3.18	2.16
Meligo	Bereleo	24	14	58	1	100	9	10	42	2.80	1.17
	Mude	24	4	58	2	67	8	10	42	1.90	0.79
Averages			10.5	53.0	2.3	75.3	9.3	11	47	2.4	1.2

District: Liquica AEZ: Northern Highlands			Food Secure HHs		# of HHs with food insecure months					Average # of food insecure months	
Suko	Aldeia	# of interviews	#	%	FHH	% of FHH	MHH	Ttl	%	Reporting HHs	All HHs
Fahilebo	Fatuniso	22	4	18	0	0	18	18	82	2.44	2
	Tuhilo Craik	27	12	44	1	50	14	15	56	2.0	1.11
Vatuboro	Caibair	25	19	76	0	0	6	6	24	1.5	0.36
	Talamalobo	24	11	46	0	0	13	13	54	2.54	1.38
Averages			11.5	46.0	0.3	12.5	12.8	13.0	54	2.1	1.2

District: Lautem AEZ: Southern Slopes			Food Secure HHs		# of HHs with food insecure months					Average # of food insecure months	
Suko	Aldeia	# of interviews	#	%	FHH	% of FHH	MHH	Ttl	%	Reporting HHs	All HHs
Lore I	Paihira	23	15	65	3	38	5	8	35	1.38	0.48
	Solepara	26	10	38	1	33	15	16	62	3	1.23
Cacavem	Chai	25	22	88	2	18	1	3	12	1	0.12
	Maluro	23	18	78	2	40	3	5	22	1.8	0.39
Averages			16.3	67.3	2.0	32.3	6.0	8.0	33	1.8	0.6

District: Covalima AEZ: Southern Highlands			Food Secure HHs		# of HHs with food insecure months					Average # of food insecure months	
Suko	Aldeia	# of interviews	#	%	FHH	% of FHH	MHH	Ttl	%	Reporting HHs	All HHs
Raimea	Beilaco	14	7	50	0	0	7	7	50	1.71	0.86
	Webaba	28	14	50	3	100	11	14	50	1.71	0.86
Matai	Cunain	23	8	35	5	100	10	15	65	1.2	0.78
	Fatuk Oan	31	14	55	8	8	6	17	45	1.64	0.74
Averages			10.8	47.5	4.0	52.0	8.5	13.3	53	1.6	0.8

District: Covalima AEZ: Southern Highlands			HHs producing sufficiently		# of HHs with food insecure months					Average # of food insecure months	
Suko	Aldeia	# of interviews	#	%	FHH	% of FHH	MHH	Ttl	%	Reporting HHs	All HHs
Raimea	Beilaco	14	0	0	0	0	14	14	100	2.57	2.57
	Webaba	28	1	4	3	100	24	27	96	2.89	2.79
Matai	Cunain	23	0	0	5	100	18	23	100	3.22	3.22
	Fatuk Oan	31	1	3	10	100	20	30	97	3.70	3.58
Averages			0.5	1.8	4.5	75.0	19.0	23.5	98	3.1	3.0

Annex F: Sources of maize seed

Sources of Sele seeds

District	N	Own seed previous harvest	Bought on market	Bought from community seed bank/group	Bought from relative/ neighbour/ friend	Given for free by relative/ neighbour/ friend	Given for free by government	Given for free by NGO	Given for free by the Church	Other
Bobonaro	8	25.0%	0.0%	0.0%	0.0%	0.0%	100.0%	12.5%	0.0%	0.0%
Liquica	28	25.0%	21.4%	3.6%	3.6%	0.0%	42.9%	17.9%	0.0%	0.0%
Lautem	39	17.9%	10.3%	0.0%	7.7%	2.6%	56.4%	17.9%	0.0%	0.0%
Covalima	17	17.6%	11.8%	0.0%	5.9%	0.0%	76.5%	5.9%	0.0%	0.0%
Average		21%	11%	1%	4%	1%	69%	13.5%	0.0%	0.0%

Sources of other seeds

District	N	Own seed previous harvest	Bought on market	Bought from community seed bank/group	Bought from relative/ neighbour/ friend	Given for free by relative/ neighbour/ friend	Given for free by government	Given for free by NGO	Given for free by the Church	Other
Bobonaro	98	77.6%	34.7%	0.0%	2.0%	2.0%	1.0%	0.0%	0.0%	0.0%
Liquica	95	57.9%	13.7%	10.5%	15.8%	4.2%	14.7%	8.4%	0.0%	0.0%
Lautem	96	80.4%	37.1%	2.1%	19.6%	18.6%	5.2%	4.1%	0.0%	0.0%
Covalima	96	85.4%	24.0%	0.0%	3.1%	0.0%	9.4%	1.0%	0.0%	0.0%
Average		75%	27%	3%	10%	6%	8%	3%	0.0%	0.0%

Annex G: Maize production area and varieties

Land area for maize production (Ha) - % of HHs

	Bobonaro	Liquica	Lautem	Covalima	Average
0 - 0.25	7.1	17.3	25.8	3.1	13.3
0.25 - 0.5	10.2	27.6	27.8	33.3	24.7
0.5 - 1	46.9	44.9	33	55.2	45.0
More than 1	35.7	10.2	13.4	8.3	16.9

Maize growing

	Bobonaro	Liquica	Lautem	Covalima	Average
Growing Sele - % of HHs	8.16	29.6	40.2	17.7	24
Area dedicated to Sele - % of Sele growers	48.1	56	60.4	39.7	51
Other varieties - % of HHs	100	96.9	99	100	99

Seed post harvest losses

	Bobonaro	Liquica	Lautem	Covalima	Average
N Sele	8	29	39	17	23
Sele losses (%)	29.4	40.4	43.7	42.9	39
N other varieties	98	95	96	96	96
Other varieties losses (%)	53.1	42.5	44	40.6	45

Sele planting area - % of total maize area

	Bobonaro (N=8)	Liquica (N=29)	Lautem (N=39)	Covalima (N=17)	Average
Area dedicated to Sele - % of Sele growers	48.1	56	60.4	39.7	51

Storage losses

	Bobonaro	Liquica	Lautem	Covalima	Average
Sele losses (%)	29.4	40.4	43.7	42.9	39
Other varieties losses (%)	53.1	42.5	44	40.6	45

Annex H: Storage methods of maize seeds

Below are two tables, one for Sele, and one for the other varieties. In each of the tables the most popular storage method for each of the districts is highlighted in red.

Storage method Sele - % of HHs

	Bobonaro	Liquica	Lautem	Covalima	Average
Storage in sacks	0	14	8	6	7
Storage above the fire place	50	32	33	18	33
Hanging in trees	0	21	26	0	12
Storage in metal drum (200L) at household	0	14	46	12	18
Storage in metal drum (200L)– shared with several households	0	0	3	0	1
Storage in plastic container – at Household	25	18	23	59	31
Storage in plastic container – shared with several households	0	0	10	0	3
Storage in metal silo – at Household	13	0	3	6	6
Storage in metal silo – shared with several households	0	0	0	0	0
Storage in plastic bags	38	4	5	0	12
Air-tight metal container just for seeds	0	0	0	0	0
Storage in Grain-Pro bag in metal container	0	4	0	0	1
Storage in Grain-Pro bag in metal container	0	4	0	0	1
Put in Bamboo	0	0	0	0	0

Storage method other varieties - % of HHs

	Bobonaro	Liquica	Lautem	Covalima	Average
Storage in sacks	10	7	6	8	7.8
Storage above the fire place	85	31	46	18	45.0
Hanging in trees	3	15	12	2	8.0
Storage in metal drum (200L) at household	1	36	43	6	21.5
Storage in metal drum (200L)– shared with several households	0	1	4	0	1.3
Storage in plastic container – at Household	21	9	25	68	30.8
Storage in plastic container – shared with several households	0	0	0	0	0.0
Storage in metal silo – at Household	0	1	2	4	1.8
Storage in metal silo – shared with several households	0	0	0	0	0.0
Storage in plastic bags	1	0	4	0	1.3
Air-tight metal container just for seeds	0	1	1	0	0.5
Storage in Grain-Pro bag in metal container	0	1	0	0	0.3
Storage in Grain-Pro bag in metal container	0	2	1	0	0.8
Put in Bamboo	0	0	1	0	0.3

Annex I: Roles in seed production and storage

The figures highlighted in red are the high percentages in Liquica for activities undertaken jointly by men and women.

All respondents

<u>Preparing land</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	52.0%	13.3%	49.5%	77.1%	48.0%
Main female or wife	10.2%	3.1%	25.8%	13.5%	13.1%
Husband and wife jointly	25.5%	56.1%	21.6%	6.3%	27.4%
Someone else in the household	7.1%	18.4%	2.1%	3.1%	7.7%
Male, female and others	5.1%	9.2%	1.0%	0.0%	3.8%

<u>Planting seeds</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	2.0%	1.0%	5.2%	2.1%	2.6%
Main female or wife	57.1%	17.3%	37.1%	63.5%	43.8%
Husband and wife jointly	10.2%	34.7%	39.2%	7.3%	22.8%
Someone else in the household	7.1%	24.5%	9.3%	24.0%	16.2%
Male, female and others	23.5%	22.4%	9.3%	3.1%	14.6%

<u>Selecting seeds</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	2.0%	6.1%	6.2%	2.1%	4.1%
Main female or wife	68.4%	24.5%	71.1%	59.4%	55.8%
Husband and wife jointly	20.4%	57.1%	19.6%	13.5%	27.7%
Someone else in the household	3.1%	11.2%	2.1%	24.0%	10.1%
Male, female and others	6.1%	1.0%	1.0%	1.0%	2.3%

<u>Drying seeds</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	1.0%	1.0%	7.2%	3.1%	3.1%
Main female or wife	68.4%	28.6%	37.1%	63.5%	49.4%
Husband and wife jointly	25.5%	52.0%	34.0%	13.5%	31.3%
Someone else in the household	1.0%	12.2%	12.4%	19.8%	11.4%
Male, female and others	4.1%	6.1%	9.3%	0.0%	4.9%

<u>Storage of seeds</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	8.2%	4.1%	9.3%	8.3%	7.5%
Main female or wife	35.7%	9.2%	44.3%	71.9%	40.3%
Husband and wife jointly	48.0%	74.5%	39.2%	12.5%	43.5%
Someone else in the household	3.1%	9.2%	3.1%	5.2%	5.1%
Male, female and others	5.1%	3.1%	4.1%	2.1%	3.6%

Male respondents

<u>Preparing land</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	64.8%	20.7%	72.9%	91.1%	62.4%
Main female or wife	1.9%	0.0%	0.0%	0.0%	0.5%
Husband and wife jointly	27.8%	62.1%	22.9%	5.4%	29.5%
Someone else in the household	0.0%	12.1%	4.2%	3.6%	5.0%
Male, female and others	5.6%	5.2%	0.0%	0.0%	2.7%

<u>Planting seeds</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	3.7%	1.7%	8.3%	1.8%	3.9%
Main female or wife	50.0%	17.2%	27.1%	60.7%	38.8%
Husband and wife jointly	13.0%	39.7%	50.0%	8.9%	27.9%
Someone else in the household	5.6%	15.5%	2.1%	23.2%	11.6%
Male, female and others	27.8%	25.9%	12.5%	5.4%	17.9%

<u>Selecting seeds</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	4%	10%	8%	4%	6.5%
Main female or wife	54%	19%	67%	50%	47.3%
Husband and wife jointly	31%	60%	23%	18%	33.2%
Someone else in the household	2%	9%	2%	27%	9.8%
Male, female and others	9%	2%	0%	2%	3.2%

<u>Drying seeds</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	1.9%	1.7%	12.5%	5.4%	5.4%
Main female or wife	53.7%	31.0%	16.7%	53.6%	38.7%
Husband and wife jointly	40.7%	51.7%	50.0%	17.9%	40.1%
Someone else in the household	0.0%	8.6%	10.4%	23.2%	10.6%
Male, female and others	3.7%	6.9%	10.4%	0.0%	5.3%

<u>Storage of seeds</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	7.4%	6.9%	10.4%	14.3%	9.8%
Main female or wife	11.1%	5.2%	27.1%	58.9%	25.6%
Husband and wife jointly	74.1%	79.3%	54.2%	17.9%	56.4%
Someone else in the household	1.9%	5.2%	4.2%	5.4%	4.1%
Male, female and others	5.6%	3.4%	4.2%	3.6%	4.2%

Female respondents

<u>Preparing land</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	36.4%	2.5%	26.5%	57.5%	30.7%
Main female or wife	20.5%	7.5%	51.0%	32.5%	27.9%
Husband and wife jointly	22.7%	47.5%	20.4%	7.5%	24.5%
Someone else in the household	15.9%	27.5%	0.0%	2.5%	11.5%
Male, female and others	4.5%	15.0%	2.0%	0.0%	5.4%

<u>Planting seeds</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	0.0%	0.0%	2.0%	2.5%	1.1%
Main female or wife	65.9%	17.5%	46.9%	67.5%	49.5%
Husband and wife jointly	6.8%	27.5%	28.6%	5.0%	17.0%
Someone else in the household	9.1%	37.5%	16.3%	25.0%	22.0%
Male, female and others	18.2%	17.5%	6.1%	0.0%	10.5%

<u>Selecting seeds</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	0.0%	0.0%	4.1%	0.0%	1.0%
Main female or wife	86.4%	32.5%	77.6%	72.5%	67.2%
Husband and wife jointly	6.8%	52.5%	14.3%	7.5%	20.3%
Someone else in the household	4.5%	15.0%	2.0%	20.0%	10.4%
Male, female and others	2.3%	0.0%	2.0%	0.0%	1.1%

<u>Drying seeds</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	0.0%	0.0%	2.0%	0.0%	0.5%
Main female or wife	86.4%	25.0%	57.1%	77.5%	61.5%
Husband and wife jointly	6.8%	52.5%	18.4%	7.5%	21.3%
Someone else in the household	2.3%	17.5%	14.3%	15.0%	12.3%
Male, female and others	4.5%	5.0%	8.2%	0.0%	4.4%

<u>Storage of seeds</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	9.1%	0.0%	8.2%	0.0%	4.3%
Main female or wife	65.9%	15.0%	61.2%	90.0%	58.0%
Husband and wife jointly	15.9%	67.5%	26.5%	5.0%	28.7%
Someone else in the household	4.5%	15.0%	2.0%	5.0%	6.6%
Male, female and others	4.5%	2.5%	2.0%	0.0%	2.3%

Female respondents not FHH

<u>Preparing land</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	51.6%	3.0%	50.0%	81.8%	46.6%
Main female or wife	3.2%	6.1%	9.1%	4.5%	5.7%
Husband and wife jointly	32.3%	54.5%	36.4%	13.6%	34.2%
Someone else in the household	9.7%	18.2%	0.0%	0.0%	7.0%
Male, female and others	3.2%	18.2%	4.5%	0.0%	6.5%

<u>Planting seeds</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	0.0%	0.0%	0.0%	4.5%	1.1%
Main female or wife	64.5%	15.2%	9.1%	68.2%	39.2%
Husband and wife jointly	9.7%	33.3%	59.1%	4.5%	26.7%
Someone else in the household	6.5%	30.3%	18.2%	22.7%	19.4%
Male, female and others	19.4%	21.2%	13.6%	0.0%	13.6%

<u>Selecting seeds</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	0.0%	0.0%	4.5%	0.0%	1.1%
Main female or wife	83.9%	24.2%	59.1%	63.6%	57.7%
Husband and wife jointly	9.7%	63.6%	31.8%	13.6%	29.7%
Someone else in the household	6.5%	12.1%	0.0%	22.7%	10.3%
Male, female and others	0.0%	0.0%	4.5%	0.0%	1.1%

<u>Drying seeds</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	0.0%	0.0%	0.0%	0.0%	0.0%
Main female or wife	83.9%	21.2%	40.9%	77.3%	55.8%
Husband and wife jointly	9.7%	60.6%	36.4%	9.1%	28.9%
Someone else in the household	3.2%	15.2%	9.1%	13.6%	10.3%
Male, female and others	3.2%	3.0%	13.6%	0.0%	5.0%

<u>Storage of seeds</u>	Bobonaro	Liquica	Lautem	Covalima	Average
Main male or husband	12.9%	0.0%	13.6%	0.0%	6.6%
Main female or wife	61.3%	9.1%	27.3%	90.9%	47.1%
Husband and wife jointly	19.4%	78.8%	54.5%	9.1%	40.4%
Someone else in the household	3.2%	12.1%	0.0%	0.0%	3.8%
Male, female and others	3.2%	0.0%	4.5%	0.0%	1.9%

Annex J: Decision making within households

All respondents		Selling of large assets (eg livestock, land)	Buying of large assets (eg livestock, land)	Investments in agriculture (eg seed, tools)	What to plant, when and where (food crops)	What to plant, when and where (cash crops)	Attending meetings or activities at the community level	Buying food for daily consumption	Deciding what to do with family income
Bobonaro	Main male or husband	36%	30%	36%	18%	13%	48%	8%	21%
	Main female or wife	14%	15%	18%	24%	24%	31%	78%	27%
	Husband and wife jointly	49%	54%	45%	52%	62%	19%	14%	52%
	Someone else in the household	1%	1%	1%	5%	0%	2%	0%	0%
Liquica	Main male or husband	4%	4%	38%	2%	5%	62%	8%	5%
	Main female or wife	9%	9%	8%	4%	7%	9%	7%	8%
	Husband and wife jointly	82%	82%	51%	76%	78%	22%	74%	78%
	Someone else in the household	5%	5%	3%	18%	10%	6%	10%	9%
Lautem	Main male or husband	27%	16%	38%	8%	7%	38%	8%	18%
	Main female or wife	27%	33%	27%	38%	39%	26%	47%	35%
	Husband and wife jointly	43%	48%	34%	51%	49%	34%	33%	46%
	Someone else in the household	3%	2%	1%	3%	4%	2%	11%	1%
Covalima	Main male or husband	18%	19%	78%	22%	9%	75%	36%	9%
	Main female or wife	16%	16%	20%	45%	54%	17%	56%	45%
	Husband and wife jointly	65%	64%	2%	30%	29%	6%	6%	46%
	Someone else in the household	2%	2%	0%	3%	7%	2%	1%	0%
Average	Main male or husband	21%	17%	47%	13%	9%	56%	15%	13%
	Main female or wife	16%	18%	18%	28%	31%	21%	47%	29%
	Husband and wife jointly	60%	62%	33%	52%	55%	21%	32%	55%
	Someone else in the household	3%	3%	1%	7%	5%	3%	6%	3%

Male respondents		Selling of large assets (eg livestock, land)	Buying of large assets (eg livestock, land)	Investments in agriculture (eg seed, tools)	What to plant, when and where (food crops)	What to plant, when and where (cash crops)	Attending meetings or activities at the community level	Buying food for daily consumption	Deciding what to do with family income
Bobonaro	Main male or husband	30%	30%	37%	20%	15%	59%	11%	33%
	Main female or wife	2%	2%	6%	7%	7%	11%	70%	7%
	Husband and wife jointly	69%	69%	57%	65%	78%	28%	19%	59%
	Someone else in the household	0%	0%	0%	7%	0%	2%	0%	0%
Liquica	Main male or husband	7%	7%	43%	3%	7%	66%	14%	7%
	Main female or wife	3%	3%	3%	0%	2%	3%	2%	3%
	Husband and wife jointly	84%	84%	52%	83%	79%	28%	72%	79%
	Someone else in the household	5%	5%	2%	14%	12%	3%	12%	10%
Lautem	Main male or husband	35%	27%	50%	10%	8%	56%	13%	27%
	Main female or wife	4%	6%	2%	17%	15%	0%	33%	10%
	Husband and wife jointly	58%	63%	46%	69%	73%	44%	42%	63%
	Someone else in the household	2%	4%	2%	4%	4%	0%	13%	0%
Covalima	Main male or husband	23%	21%	95%	32%	11%	89%	48%	11%
	Main female or wife	0%	0%	4%	29%	39%	4%	43%	39%
	Husband and wife jointly	75%	77%	2%	36%	38%	5%	7%	50%
	Someone else in the household	2%	2%	0%	4%	13%	2%	2%	0%
Average	Main male or husband	24%	21%	56%	17%	10%	68%	21%	20%
	Main female or wife	2%	3%	4%	13%	16%	5%	37%	15%
	Husband and wife jointly	72%	73%	39%	63%	67%	26%	35%	63%
	Someone else in the household	2%	3%	1%	7%	7%	2%	7%	3%

Female Respondents		Selling of large assets (eg livestock, land)	Buying of large assets (eg livestock, land)	Investments in agriculture (eg seed, tools)	What to plant, when and where (food crops)	What to plant, when and where (cash crops)	Attending meetings or activities at the community level	Buying food for daily consumption	Deciding what to do with family income
Bobonaro	Main male or husband	43%	30%	34%	16%	11%	34%	5%	7%
	Main female or wife	30%	32%	34%	45%	45%	55%	86%	50%
	Husband and wife jointly	25%	36%	30%	36%	43%	9%	9%	43%
	Someone else in the household	2%	2%	2%	2%	0%	2%	0%	0%
Liquica	Main male or husband	0%	0%	30%	0%	3%	58%	0%	3%
	Main female or wife	18%	18%	15%	10%	15%	18%	15%	15%
	Husband and wife jointly	78%	78%	50%	65%	75%	15%	78%	75%
	Someone else in the household	5%	5%	5%	25%	8%	10%	8%	8%
Lautem	Main male or husband	18%	6%	27%	6%	6%	20%	4%	8%
	Main female or wife	49%	59%	51%	59%	63%	51%	61%	59%
	Husband and wife jointly	29%	35%	22%	33%	27%	24%	24%	31%
	Someone else in the household	4%	0%	0%	2%	4%	4%	10%	2%
Covalima	Main male or husband	10%	15%	55%	8%	8%	55%	20%	8%
	Main female or wife	38%	38%	43%	68%	75%	35%	75%	53%
	Husband and wife jointly	50%	45%	3%	23%	18%	8%	5%	40%
	Someone else in the household	3%	3%	0%	3%	0%	3%	0%	0%
Average	Main male or husband	18%	13%	36%	7%	7%	42%	7%	6%
	Main female or wife	33%	37%	36%	46%	50%	40%	59%	44%
	Husband and wife jointly	45%	48%	26%	39%	41%	14%	29%	47%
	Someone else in the household	3%	2%	2%	8%	3%	5%	4%	2%

	Female Headed Households	Selling of large assets (eg livestock, land)	Buying of large assets (eg livestock, land)	Investments in agriculture (eg seed, tools)	What to plant, when and where (food crops)	What to plant, when and where (cash crops)	Attending meetings or activities at the community level	Buying food for daily consumption	Deciding what to do with family income
Bobonaro	Main male or husband	15%	15%	8%	0%	0%	8%	0%	0%
	Main female or wife	77%	77%	85%	92%	100%	85%	100%	92%
	Husband and wife jointly	0%	0%	0%	0%	0%	0%	0%	8%
	Someone else in the household	8%	8%	8%	8%	0%	8%	0%	0%
Liquica	Main male or husband	0%	0%	0%	0%	13%	25%	0%	0%
	Main female or wife	63%	63%	63%	38%	50%	38%	38%	50%
	Husband and wife jointly	13%	13%	25%	13%	13%	0%	13%	13%
	Someone else in the household	25%	25%	13%	50%	25%	38%	50%	38%
Lautem	Main male or husband	4%	4%	4%	4%	4%	7%	4%	4%
	Main female or wife	85%	93%	93%	89%	85%	85%	78%	89%
	Husband and wife jointly	7%	4%	4%	4%	4%	0%	4%	4%
	Someone else in the household	4%	0%	0%	4%	7%	7%	15%	4%
Covalima	Main male or husband	6%	6%	17%	0%	0%	22%	6%	0%
	Main female or wife	78%	78%	83%	94%	100%	72%	94%	89%
	Husband and wife jointly	11%	11%	0%	0%	0%	0%	0%	11%
	Someone else in the household	6%	6%	0%	6%	0%	6%	0%	0%
Average	Main male or husband	6%	6%	7%	1%	4%	16%	2%	1%
	Main female or wife	76%	77%	81%	78%	84%	70%	77%	80%
	Husband and wife jointly	8%	7%	7%	4%	4%	0%	4%	9%
	Someone else in the household	10%	10%	5%	17%	8%	15%	16%	10%