

Profile of Eight Community Seed Production Groups in Ermera, Manatuto and Lautem



Ministry of Agriculture and Fisheries Seeds of Life / Fini ba Moris

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Study Report

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Seeds of Life (Fini ba Moris) is a program within the Timor-Leste (East Timor) Ministry of Agriculture and Fisheries (MAF). The Governments of Timor-Leste and Australia collaboratively fund the program. Australian funding is through Australian Aid, Department of Foreign Affairs and Trade, plus the Australian Centre for International Agricultural Research (ACIAR) and is managed by ACIAR. The Centre for Plant Genetics and Breeding (PGB) within the University of Western Australia (UWA) coordinates the Australian funded activities.

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Front cover photo. Labourers pick Nakroma rice seedlings on José dos Santos' farm outside Maliana, Bobonaro © Conor Ashleigh, 2013

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Acronyms

AS	Adoption Survey (SoL, 2014)
CSPG	Community Seed Production Group
CSP	Commercial Seed Producer
CSI	Coping Strategy Index
rCSI	Reduced Coping Strategy
DC1	Data Collection 1 (round of interviews conducted in 2013)
DC2	Data Collection 2 (round of interviews conducted in 2013)
FA	Farmer Association
FIES	Food Insecurity Experience Scale
HDD	Household Dietary Diversity
HHS	Household Hunger Scale
HH	Household
НоН	Head of household
LS	Longitudinal Study
MAHFP	Months of Adequate Food Provisioning
MTS	Mid Term Survey (SoL, 2013)
NA	Not available
PPI	Progress out of Poverty Index
SEO	Suco Extension Officer
SoL	Seeds of Life

This longitudinal survey was conducted over two years (interviews conducted in two rounds: early 2013 and early 2014) among 64 members of eight Community Seed Production Groups (CSPGs) established across three districts¹: Ermera, Manatuto and Lautem. The objective of this study is to understand if and how the involvement of these farmers in the CSPGs has impacted on their socio-economic situation, and how.

Community Seed Production Groups

Eight CSPGs were sampled in this survey: two growing the maize variety Sele, two growing Noi Mutin maize, two growing Nakroma rice, and two growing Utamua peanut. Besides one Nakroma CSPG which failed to harvest due to heavy rains and one Utamua group which harvested only a little quantity, all groups were able to share seeds among most of their members by the time of the second interviews. As a result, by February 2014, 70% of the respondents had received seeds from their CSPG, 20% had not yet received seeds, and for the remaining 10% no data was available. All the families who received seeds from their CSPGs had planted these by the time of the second interview.

Household composition

The average number of household members among the 41 cases for which information was available in 2013 and 2014 has only very slightly changed: from 8.2 members in 2013 to 7.9 members in 2014. Similarly, among the 29 households for which data was available for both interviews, the schooling situation remained very similar (in 2013, only six households had one of their member aged 8-17 not attending school).

Lastly, this survey revealed that on average, one household has the equivalent of 2.8 fulltime persons working in agriculture.

Household economic condition

The most obvious change observed was regarding the construction materials of the houses: a substantial proportion of respondents had their houses' walls, floors or roofs rebuilt with stronger materials. As a result, a statistically significant lower proportion of respondents live with less than US\$ 2.5/day in 2014: 75% vs. 81% in 2013. Also, interestingly, members of the two Nakroma CSPGs sampled were found to be the wealthiest respondents in this survey while Utamua CSPG members were amongst the poorest.

¹ In 2014, Timor-Leste changed the terminology of the sub-national levels: 'districts' became 'municipalities', and 'sub-districts' became 'administrative posts'. For the sake of readability, in this report the old terminology of 'district' and 'sub-district' will be used.

Agricultural profile

The proportion of households growing some of the major staple crops (maize, peanut, cassava and sweet potato) has increased. For example, 89% of the households in 2013 were growing maize, and this had increased to 96% in 2014.

On the other hand, quantitative answers from CSPG members reveal a decrease in the area they cultivate (from 1.24ha in 2014 to 0.83ha in 2013), as well as in the quantity harvested (except for rice) but remain on average higher than what Timorese farmers usually harvest. Consequently, the proportion of respondents selling some of their harvests has also somewhat decreased (from 31% in 2013 to 25% in 2014), with none of the Utamua CSPG members selling their produce in both years.

Interestingly, in early 2013 storage of the family maize was still very traditional: 39% of the maize growers said they usually store maize seeds and food together, the highest proportion being among members of Sele and Noi Mutin CSPGs (no such data was collected in 2014).

Men and women roles in cultivation

During the second round of interviews, questions on crop cultivation revealed that in more than 50% of the time, men and women work together to cultivate crops, even though they often share tasks according to their capacities. In a smaller proportion of cases, men are the only, or the main persons involved in cultivating crops. And it is only in a few cases that women are more involved than men in the production of certain crops (mainly vegetables or certain root-crops - besides cassava).

During the first round of interviews, questions on decision making revealed that men and women usually decide jointly on the varieties to grow, how to select seeds or the modalities of selling their agricultural products. But in a significant number of cases (about one third of the sample), the women select seeds and decide on when, where and at what price to sell the households' agricultural production.

Familiarity with improved varieties

All respondents (but three persons in 2014) declared knowing at least one improved variety and 63% in 2014 have heard about a maximum of two varieties. Sele, Noi Mutin and Nakroma are the most well-known varieties, while cassava and sweet potato are known by less than one-fourth of the sample in 2013 and 2014. Definitely, better informing CSPG members on all of the different varieties released by MAF seems crucial as they are one of the key information channels in the sucos.

Adoption of improved varieties

		Sample size	2013	Sample size	2014
Adoption of one or more improved varieties:	All sample	62	52%	56	68%
Com	mon sample	49	51%	49	76%
Adoption per variety (common sample):	Sele	50	38%	50	55%
	Noi-Mutin	50	20%	50	35%
	Nakroma	14	36%	14	30%
	5	20%	5	60%	
	34	6%	34	3%	
	Hohrae	21	10%	21	5%
Adoption per type of CSPG (total sample):		32		38	
Growing only their CS	SPG's variety		37%		45%
Growing their CSPG's variety + and	other variety		44%		31%
Growing only another impr	oved variety		19%		24%

The main reason for CSPG members not to grow more improved varieties is not having access to these varieties.

Food security

		Common sample size	2013	2014
Average food-shortage period ²	:	38	1.6 months	2.9 months
Average # of Months of Adequa	56	5.9 months	8.4 months	
Average quantity of rice purcha	ased yearly	43	289kg	278kg
Proportion of respondents coll	56	43%	27%	
Household Coping Strategy Ind	38	16.3	4.6	
Food Insecurity Experience Sca	le % of food secure HHs	56	NA	41%
%	of HHs with mild food insecurity	56	NA	18%
% of H	Is with moderate food insecurity	56	NA	34%
% o	f HHs with severe food insecurity	56	NA	7%
Household Hunger Scale	Little to no hunger in the HH	56	NA	93%
	Moderate hunger in the HH	56	NA	7%
Average Household Dietary Div	57		5.7	

² "Food-shortage": period when no self-grown maize/rice/peanut/cassava/sweet-potato available.

1.1. Methodology

One of the chore component of the third phase of the Seeds of Life program (SoL) is the formation of Community Seed Production Groups (CSPGs) throughout the country to supply farmers in quality improved seeds and cuttings grown locally in the sucos.

The purpose of this case study is to gain a better understanding of what changes experience members of these CSPGs. How has their involvement in these groups impacted on the socio-economic situation of their families over time?

In order to select which CSPGs would be part of this study, a first round of visits were conducted early 2013 to a large number of CSPGs in Ermera, Manatuto and Lautem (32 groups in total). During this first data gathering, general information on the groups was collected: membership, varieties grown, impression on the member's food security situation and how easy/difficult it might be to do social research in the sucos.

From there, eight CSPGs were identified as the most suitable for the purpose of this survey: two groups growing Sele, two growing Noi Mutin, two growing Nakroma and two groups growing Utamua. They were then visited twice: once in April-May 2013 and a second time in February-March 2014.

During the first data collection, paper based questionnaires were used while the second data collection was conducted electronically using tablets. Data was primarily collected by the M&E/Sosek team working within the SoL program. During the second data collection, lists of household (HH) members collected during the first round of interviews were taken to the field and used to update the information on HH members. The rest of the data collected during the first phase was also brought to the field (on printed Excel sheet) to help enumerators cross-check information but was most probably not used by the survey team.

All the data collected was then cleaned, compiled into a single data set and analysed on SPSS (see Appendix I).

Note that among the 64 HHs interviewed during the first data collection, only two of them were female headed households. As a result, no gender-disaggregated data based on the gender of the Head of Household (HoH) is presented in this report (too small proportion of female HoH).

1.2. Overview of the eight CSPGs selected

	Sub			Crop	Number of Members			Ranking
District	district	Suco	Name of CSPG	variety of	of CSPGs	surveyed	surveyed	of the
	uistrict			the CSPG	in 2012	in 2013	in 2014	CSPG
Ermera	Railaco	Lihu	Lesrema	Sele	14	15	15	А
		Tocoluli	Aihatato	Noi Mutin	10	10	9	А
	Hatolia	Ailelo	Loron Matan	Noi Mutin	11	6	4	В
Lautem	Lospalos	Fuiloro	Haburas	Nakroma	12	12	9	В
	Lautem	Maina I	Lautem 2	Sele	12	3	3	В
		Baduro	Moris Mesak	Utamua	9	5	4	В
Manatuto	Lalaeia	Lifau	Fela Hametin	Nakroma	9	6	6	А
	Laclo	Umacaduac	Remis	Utamua	8	7	7	NA
					85	64	57	

Table 1. CSPGs selected for the longitudinal study

Table 1 lists the CSPGs that were selected for the longitudinal study, their location, the improved variety they multiply and the number of persons that were interviewed during both rounds of interviews.

• Number of respondents

Note that the total number of group members is also listed in this table but anecdotal evidence seems to indicate that group data are often not very reliable considering the fluidity of names and participant numbers.

At the time of the first data collection, in most groups a smaller number of respondents were interviewed compared to the total number of members. The main reason for this is that whenever several CSPG members belonged to the same HH, only one of them was interviewed. Also, in the CSPG Fela Hametin, three members had left the group since its creation in 2012 and were therefore not interviewed.

In the CSPG Lesrema, the group had taken on another member since its creation which explains that 15 members were interviewed in 2013.

In 2014, 57 respondents were interviewed in total. All of them were part of households that were interviewed in 2013 but one respondent had to be dropped for the data analysis due to the impossibility to identify to which HH of the first data collection this respondent belonged to. Consequently, most results of this study will be presented in two steps: (1) among "total samples" (i.e. among the total number of respondents interviewed during the first and second round of interviews) and (2) among the "common sample" which will only include households who were interviewed during both data collections.



Figure 1. Location of the CSPGs selected for the longitudinal study³

• CSPG's capabilities ranked by sub-district coordinators

In 2014, MAF's sub-district coordinators conducted an assessment of the CSPGs in the area under their supervision and gave a ranking to each group from A to C (A corresponding to a high/good capability and C to a low capability). These rankings are presented in the last column of **Error! Reference source not found**..

None of these CSPGs are among the ones with low capabilities. Also, note that in Lautem, the CSPG Lautem2 became in 2015 part of the Farmer Association (FA) Neon Ida and the CSPG Remis (Manatuto) became part of the FA Ilimanu Anan.

³ Map prepared by Samuel Bacon, Climate Change Advisor of Seeds of Life.

2.1. Respondents and their CSPGs

Table 2 presents data collected about CSPGs' productions and how seeds are shared among members. In reality, only 67% (43 cases) of the respondents were aware about the total quantity harvested by their CSPG in 2013 but extrapolation to other group members were made based on the data from these 43 respondents.

Name of CSPG	Variety	Sample size		First CSPG	# of members havin received seeds		Average quantity
		2013	2014	harvest	Yes	No	received
Lesrema (Ermera)	Sele	15	15	394kg	15/15		3kg
Lautem2 (Lautem)	Sele	3	3	480kg	3/3		6kg
Aihatato (Ermera)	Noi Mutin	10	9	130kg	7/10	2/10	2kg
Loron Matan (Ermera)	Noi Mutin	6	4	68kg	3/6	1/6	5kg
Haburas (Lautem)	Nakroma	12	8	300kg	10/12		25kg
Fela Hametin (Manatuto)	Nakroma	6	6	400kg	1/6	5/6	400kg ⁴
Moris Mesak (Lautem)	Utamua	5	4	43kg		4 / 5	
Remis (Manatuto)	Utamua	7	7	132kg	6/7	1/7	5kg

Table 2. CSPGs' seed production and sharing seeds among members

Clearly, the two Sele and Nakroma CSPGs were able to produce the highest quantities: about 400-480 kilos for Sele groups and 300-400 kilos for Nakroma groups. If each of these CSPG had initially received five kilos of seeds (standard quantity distributed to new CSPGs) this would mean that the two Sele groups have performed better than expected (300 kilos on average), and that the two Nakroma groups performed slightly under expectations (500 kilos on average).

⁴ 400kg is in fact the total quantity harvested by this CSPG and which had not yet been shared among members by the time of the second data collection. Only one respondent of this CSPG (the group leader) said he received 400kg but that is probably temporary, until seeds are distributed among members.

2.1.1. Seed sharing among CSPG members

Among the total sample interviewed in 2013 (64 cases), 70% of the respondents had received seeds from their CSPG by February 2014, 20% had received no seeds by then and for 10%, no data is available (not answered the question or not re-interviewed in 2014).

The CSPG "Haburas" in Lautem was the first to distribute seeds to its members (in March-April 2013): 25kg of Nakroma seeds per member. For all the other groups, sharing of the seeds happened later in the year or just prior the 2014 planting season. The quantities received ranged from 2kg to 25 kg of seeds (for Noi Mutin and Nakroma respectively). Note that the reported quantities of seeds received by members of the same CSPG can be different from one member to the other, which would mean that some members are favoured over others or that quantities to be shared for each member depend on the size of each member's land.

The main reasons why about 20% of the sample still hadn't received seeds by the time of the second data collection are that:

- The CSPG's production was damaged during harvest (floods) and therefore no seeds could be shared. About 400 kilos of probably spoiled grains were stored in the house of the group leader (five cases in *"Fela Hametin"*, Nakroma)
- The CSPG's production was too low to be able to share seeds among members (four cases in "*Moris Mesak*", Utamua)
- The respondents had no free land to plant these seeds (two cases in the CSPG *Ai Hatato*, Noi Mutin)
- One member wasn't active enough in the CSPG to be given seeds (CSPG *Loron Matan*, Noi Mutin)
- According to one person in the CSPG *Remis* (Manatuto), all the seeds were used to plant in the CSPG plot only. This isn't correct: other members of this group received about five kilos of seeds each.

2.1.2. Use of the seeds received

All the respondents who received seeds by the time of the second interview said they planted all of it, besides two who planted only part of it: one shared seeds with five relatives and another one kept some seeds as reserve. Note that only two respondents in 2013 said they planned to share seeds with others when they would receive seeds from their CSPG, but one year later, they had planted all the seeds on their own farms. Similar results were found in SoL's 2014 Adoption Survey (AS) where, even though a lot of farmers mentioned having shared planting material with others, the proportion of farmers saying that they sourced seeds/cuttings from other farmers was still very low.

Finally, among the 45 respondents who got a share of the CSPG's seed production, only one shared seeds with non CSPG members. This isn't surprising given this was their first time benefiting from their work within the CSPG and that their share was probably just enough to plant on their own farms.

In other words, in 2014, one could say that the diffusion of improved seeds from CSPGs created in 2013 was still very low. Similarly, in the 2014 AS, among the 702 respondents surveyed, 228 were adopters and only one of them had sourced improved seeds from a CSPG (Sele seeds purchased from the FA in Fahilebo).

2.1.3. Receiving seeds from other sources

Note that 32% of the 2014 respondents (i.e. 18 persons) also reported having received free seeds from other sources (government or NGOs like Child Fund): 11 respondents received maize seeds (mainly Sele, but also Noi Mutin, Arjuna, Bisma), five respondents received rice seeds (IR64, Ciherang) and others didn't give details on what they received. Lastly, among these 18 farmers, 14 had already planted the seeds they received from other sources.

2.2. Household composition

2.2.1. Information on the Head of Household and respondents

Table 3 presents the general information on the HoH. Given that the profile of HoHs who were re-interviewed in 2014 is about the same as of those who weren't re-interviewed, results are shown for the whole sample only (64 HoHs).

The school level of the HoH is overall very low with 69% of HoHs having not been to school or not completed primary school.

In 2014, the question related to the main occupation of the HoH in the past 12 months wasn't asked the same way which limits comparison with the above data. Among the 40 cases where updated information was collected in 2014:

- 80% said they spent 100% of their time in agriculture,
- 15% said they spend more than half of their time in agriculture
- 5% (i.e. two cases) said they spend less than half of their time in agriculture.

There seems to be inconsistencies between the data collected in 2013 and 2014: among the six respondents who first declared the HoH's main occupation is not agriculture, two then said in 2014 that the HoHs spent 100% of their time in agriculture. It could also be that the HoHs' main occupation has evolved between 2013 and 2014. No data was collected for the four other cases in 2014.

Characteristics of	% among 64 HoHs	
Gender	Male-headed households	97%
	Female-headed households	3% (2 cases)
Age (in 2013)	Average age of HoH	46 years old
< 29		11%
30-39		11%
40-49		41%
50-59		26%
60+		11%
Main occupation	n in the past 12 months	
Agriculture		91%
Other		9%
School level		
None, pre-s	chool or primary class 1	44%
Primary cla	ss 2-5	25%
Primary cla	ss 6 to pre-secondary class 2	9%
Pre-second	ary class 3 or higher	22%

Table 3. Summary information on Head of Households

In about 60% of the cases, the respondent interviewed during the first round of interviews was the HoH. In other cases, his wife or someone else in the family was interviewed. 37% only of these respondents were women but it is likely that more women in fact participated in the interviews (even though they weren't the main respondent), especially for the sections related to food preparation and food security in general. Respondent's ages ranged from 21 to 63 years old, with an average of 44 years old.

2.2.2. Information on household members

Among the 56 households re-interviewed in 2014, updated information on HH members was collected only for 41 households, limiting the quality of the comparison. For more coherence, the 2013 data is presented in two different ways: among the total sample interviewed in 2013 (64 cases) and among the 41 cases for which updated information was collected.

a. Household sizes

The average number of HH members among the 41 cases for which updated information was collected has only very slightly changed (Table 4): 8.2 in 2013 and 7.9 in 2014. Some families have welcomed new HH members, mainly newborns or new spouses: 18 new members in total. And some families have seen some of their members leave the house to start a new family or move to a new location (for school or work): 30 members left in total.

	Total s	ample	Common sample (41 cases)		
	2013	2014	2012	2014	
	(64 cases)	(41 cases)	2013	2014	
Average number of HH members	8.2	7.9	8.2	7.9	
Minimum number of HH members	1	3	3	3	
Maximum number of HH members	16	13	16	13	
• 1-4 members	12%	14%	12%	14%	
• 5-7 members	25%	32%	27%	32%	
• 8-10 members	41%	32%	37%	32%	
• 11 members +	22%	22%	24%	22%	

Table 4. Number of household members

b. Age and gender of household members

Among the 41 households with data available in both data collections, the average age of HH members has increased from 21.8 years in 2013 to 22.3 years old in 2014. The fact that it hasn't increased more is mainly due to the number of new born babies in 2014 (nine among 310 persons) and the fact that 25 adults have left the HH between both surveys.

In 2013 and 2014, the households' composition in terms of gender stayed the same: 54% of male HH members and 46% of female HH members.

Note that the proportion of households with a member of the family receiving a veteran's pension is quite significant: 26% (it was 18% in a survey targeting 339 seed distribution beneficiaries). It is unclear if there is a specific reason to this.

c. Schooling situation of household members aged 8-17 years old

Information on the schooling situation of HH members aged 8-17 years old is presented in Table 5. Consistent comparison of the data was possible for 29 cases only. The difference between the situation in 2013 and 2014 among these 29 cases isn't significant enough to make any conclusion. The very slight decrease in proportion of households with all members aged 8-17 attending school (from 65% to 62%) is because two households had one of their 16 years old member turn 17 in 2014 and stopped attending school then (probably to start work). On the other hand, one household which had no children aged 8-17 welcomed a new 17 years old member attending school.

	Total sample 2013 2014		Common sample (29 cases)	
	(64 cases)	(29 cases)	2013	2014
% of HHs with no members aged 8-17	17%	31%	28%	31%
% of HHs with not all members aged 8-17 attending school	9%	7%	7%	7%
% of HHs with all members aged 8-17 attending school (among HH with members 8-17 years old)	74%	62%	65%	62%

Table 5. Schooling situation	of HH mer	nbers
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It is most likely that, on average, the schooling situation for all 64 households has also remained quite similar to what it was in 2013 when only few households (six among 64) had one of their member aged 8-17 not attending school.

d. Proportion of work time allocated to agriculture

This data was only collected in 2014. Respondents were asked how much of each HH members' worktime was spent on agriculture according to a four-range scale:

- No time spent on agriculture (0%)
- Less than half of the work time spent on agriculture (1-49%)
- More than half of the work time spent on agriculture (50-99%)
- All of the work time spent on agriculture (100%)

This data was analysed in two ways: first from a household perspective, then from an individual perspective.

For the first point, on average one household has the equivalent of 2.8 full-time persons working in agriculture⁵. Table 6 presents the 31 HHs per category of time spent in total on agriculture.

Category of work time	Proportion (among 31 HHs)
< 2 (excluded) full-time working persons	16%
2-3 (3 excluded) full-time working persons	52%
3-4 (4 excluded) full-time working persons	23%
> 4 (included) full working persons	10%

Table 6. Proportion of HHs per category of work time spent in agriculture (2014)

The following data (Table 7) represents individuals only: 312 persons coming from 41 households. The first observation is that 60% of these individuals spend some of their work-time in agriculture. The remaining 40% is mainly composed of very young children. Among those who are involved in agriculture, it is most common to allocate less than half of the work-time to agriculture (29% of individuals).

⁵ This average was calculated among 31 HHs only (only 31 HHs had complete data regarding work time allocation to agriculture for all their members).

Category of work time	Proportion (among 312 HH members)
100%	22%
99-50%	9%
49-1%	29%
0%	40%

Table 7. Proportion of HH members per category of work time allocated to agriculture (2014)

More interestingly, Table 8 presents the average time spent by individuals in agriculture according to their gender and age.

	# of	Average work time	Proporti of wor	on of HH m k time alloc	embers per ated to agri	category culture
	cases	spent	100%	99-50%	49-1%	0%
By gender						
Men	165	35%	24%	5%	28%	42%
Women	147	37%	20%	14%	30%	37%
By age group						
<9	75	2%			9%	91
10-19	90	22%	3%	6%	59%	32%
20-29	55	41%	25%	9%	35%	31%
30-39	16	70%	44%	31%	13%	13%
40-49	32	85%	72%	16%	6%	6%
50-59	19	95%	79%	21%		
60+	10	70%	50%	20%	20%	10%

Table 8. Average work time spent in agriculture by all HH members per age and gender

According to this data, both men and women spend about the same amount of time working in agriculture (about one third of their work-time).

On the other hand, age is clearly influencing the amount of time spent in agriculture: young children under nine years-old hardly ever work on the farms but teenagers aged 10-19 years old spend already about one-fourth of their time helping adults on the farm. The most important time allocation for agriculture is among the 50-59 years old HH members.

2.3. Household economic condition

2.3.1. Household assets

Data on the conditions of the households' houses was consistently collected in 2013 and 2014 (Table 9). Among the 56 households interviewed twice, clearly improvements can be observed: 46% of respondents' houses had walls made of robust materials instead of 34% in 2013. Similarly, 46% had their houses' floors made of cement board/tiles versus 37% in 2013 and finally 98% of the houses had roofs made of metal sheets, zinc or tiles in 2014 versus 93% in 2013.

	Total sample	Common	sample	
House conditions	2013	(56 cases)		Reference ⁶
	(64 cases)	2013	2014	
Houses' inside area size (m ²):				
Average			58 m ²	67 m ²
Maximum	l		144 m ²	180 m ²
Minimum	1		11 m ²	9 m ²
Category of house size: < 48 m ²			49%	34%
49 m ² -78 m ²	2		29%	34%
>79 m ²	2		22%	33%
Are walls made of one or two materials?				
1 materia			84%	87%
2 materials	;		16%7	13%
Main material of walls:				
Mud, wood, bamboo, rattan, tir	63%	66%	54%	65%
Brick, concrete, unbaked brick	37%	34%	46%	35%
Main material of roofs:				
Palm leaves/grass	10	7%	2%	11%
Metal sheets, zinc, tiles, etc	90	93%	98%	89%
Main material of floors:				
Dirt/clay, bamboo	59%	63%	54%	66%
Cement board, tiles	41%	37%	46%	34%

Also, when compared to the reference data in the last column (seed distribution monitoring survey conducted by SoL in 2014), it appears that CSPG members are overall better off than the 339 distribution beneficiaries.

⁶ Data from 339 respondents of a monitoring survey on sweet-potato cuttings distribution (SoL, 2014).

⁷ Walls made of two materials are made of cement blocks on the bottom and leaves/bamboo on the top.

Most of the data on households' possessions was collected in 2014 while only little data was collected in 2013 (see Table 10).

	Total sample					
Possible answers		2013			Reference ⁸	
		(64 cases)	2013	2014		
Clothes cupboard		69%	68%			
Chair				95%	98%	
Phone				84%	70%	
TV				32%	26%	
Radio				25%	23%	
Combined: TV/radio/CD/tape	e player	39%	36%			
Combined: TV/Radio				39%		
Motorbike				18%	17%	
Bicycle				14%	3%	
Refrigerator				7%	4%	
Rice thresher				2%	0.3%	
Rice mill				0	1%	
Boat				4%	1%	
Generator				4%	1%	
Car/truck				0	1%	
Drum				36%	54%	
# of drums owned: 5 drums	No drum 1 drum 2 drums 3 drums 4 drums 5 or more			64% 20% 7% 5% 4%	46% 31% 16% 3% 2% 2%	
Households with one member receiving a Veteran's pension.		26%	26%		18%	

Table 10. Households' possessions

[The only data above that wasn't calculated among the stated sample sizes are: (1) data on veteran's pension in 2013 – calculated among 61 cases and 53 cases, (2) data on house size for 2014 – calculated among 55 cases]

The only comparison possible between round 1 and round 2 is about the proportion of households owning a TV or radio (data used to calculate the Progress out of Poverty Index in the following section). In 2013, 36% of the 56 respondents who were re-interviewed later owned at least one TV and/or one radio and/or one tape/CD player. In 2014, 39% of these same respondents owned at least one TV and/or one radio. Here again, improvement can be observed.

⁸ Data collected among 339 households interviewed for a monitoring survey on distributions of sweetpotato cuttings (SoL, 2014).

However, more comparisons can be made with the data collected during the "Seed Distribution Monitoring Survey" mentioned earlier. Here also, it appears that CSPG members in 2014 are slightly better off than seed distribution beneficiaries: more phones, TVs, radios, bicycles, fridges, etc. Also, more households among these eight CSPGs have at least one of their members receiving a veterans pension (26% here instead of 18% among 339 respondents).

But a smaller proportion of households own drums compared to the sample of the "Seed Distribution Survey". That is mainly because, at the time of the second round of interviews, the IFAD program had distributed drums only in one of the three districts sampled for this study (Manatuto).

Note that among the 20 HHs who mentioned having at least one drum during the second data collection (i.e. 36% of sample), 13 said they used it to store seeds, eight to store grain, three to store water and one to store fuel.

2.3.2. Progress out of Poverty Index (PPI)

The Progress out of Poverty Index is a poverty measurement tool comprised of a country specific survey with 10 simple multiple-choice questions. Each possible answer has a point value which are then added up to obtain a total "PPI score". These PPI scores are then converted into likelihoods that households surveyed live under a certain poverty line.

a. Adjusting PPI scores of the first round of interviews (2013)

During the first data collection, farmers were asked to reply directly to the 10 questions of the "PPI scoring table", including two questions about HH members and one about land cultivated. These three questions are often very confusing for respondents as they need to have a good overview of how many HH members they have, of the schooling situation of each member aged 8-17 years old and of the size of the land they cultivate (often unknown). However, more detailed questions about the HH composition and the plots owned and cultivated by the HH were also asked in other sections of the questionnaire which helped cross-checking information.

Comparative analysis revealed that:

- Among the 58 cases for which data on land size was complete (i.e. size of each of the plot owned by the HH), 16 respondents only selected a matching answer in the "PPI scoring table". In other cases, answers provided in the PPI scoring table were either too high or too low compared to the actual size of land cultivated.
- In six cases, the PPI score entered for the question about HH members schooling situation was different from the information given in the list of HH members.

• In two cases, the total number of HH members listed didn't match the PPI score related to the total number of HH members.

This highlights how unreliable even the supposedly straightforward data can be. However, for the purpose of this survey, it was assumed that the correct data was the data where detailed information was provided by the respondent (i.e. list and details of each HH member, or of each plot cultivated) rather than the answer initially given in the "PPI scoring table". Therefore, corrections were made to the PPI scores of these three questions accordingly and the total PPI scores could be calculated for 61 respondents of the first data collection.

b. Adjusting PPI scores of the second round of interviews (2014)

In order to calculate the total PPI scores for the second data collection, a number of adjustments were required:

- The PPI question on the number of cupboards owned by the household wasn't asked and therefore, it was assumed that this number would be the same as in 2013. Note that this questions doesn't impact much the final PPI score anyways (ranged from 0 to 4 points maximum).
- The PPI question about owning TVs, radios, or CD-tape players wasn't asked the same way: did not include CD/tape players in 2014. Given only few farmers own CD/tape players compared to TV or radios, it was assumed that knowing if the HH owned a TV or a radio was sufficient. A 5-points score was given if the family owned a TV or a radio and 0 if they none of these (as it is usually done when the question also includes CD-tape players).

As a result, for the second data collection, the total PPI scores could be calculated for 25 respondents. In the other 32 cases, either the data on HH members schooling situation was incomplete, or the number of HH members was inconsistent or the information on the HoH's main occupation was missing. Consequently, their total PPI scores couldn't be calculated. Finally, among these 25 cases, comparison with the total PPI scores of round 1 was possible for 22 respondents.

c. Poverty likelihoods

According to Table 11, the situation between both rounds of data collection has improved: a slightly smaller proportion of respondents live under the national poverty line. This is true when comparing total samples but also the common sample with 22 cases only. Statistical analysis showed that the only significant difference is between the proportion of households living with less than 2.5\$/day which went down from 81% to 75% between 2013 and 2014⁹.

⁹ Paired samples T-Test result: Sig. (2-tailed) = 0.046, p<.05

Note that if the total PPI scores for the second data collection could have been calculated for most respondents, results would probably have been different.

Total s	ample	Common sample (22 cases)				
2013	2014	2012	2014			
(57 cases)	(25 cases)	2015	2014			
31%	27%	31%	23%			
29%	25%	28%	20%			
80%	78%	81%	75%			
	Total s 2013 (57 cases) 31% 29% 80%	Total sample 2013 2014 (57 cases) (25 cases) 31% 27% 29% 25% 80% 78%	Total sample Common sample 2013 2014 (57 cases) (25 cases) 31% 27% 29% 25% 80% 78%			

Table 11. Poverty likelihoods

d. Poverty likelihoods and type of CSPG

Figure 2 presents the average likelihoods for respondents of each type of CSPG to live under the national poverty line.



Figure 2. Poverty likelihood and type of CSPG

According to this chart, the members of the two Nakroma CSPGs are among the wealthiest respondents. One of these CSPGs was ranked "A" by the sub-district coordinator in 2014 (Fela Hametin in Manatuto). Also, interestingly, the proportion of respondents living under the national poverty line among Sele and Noi Mutin CSPGs is very similar (only about 1% difference).

As for the evolution between 2013 and 2014, the proportion of respondents living under the national poverty line seems to have significantly decreased. However, it is important to keep in mind that the 2014 PPI data was available for less than half of the sample (44%) and consequently, the above chart is not representative of the whole sample.

2.4. Agricultural profiles/productions

2.4.1.Land parcels

Table 12 summarizes all the information collected on land parcels cultivated by the households: number of plots, size of the total land cultivated, distance from respondent's houses, etc.

	Total samples		Common	sample
	2013	2014	(56 ca	ases)
	(64 cases)	(56 cases)	2013	2014
Average number of plots owned/cultivated	1.7	1.6	1.7	1.6
Average area cultivated (all plots combined) – among 62, 41 and 39 cases respectively	1.24 ha	0.83 ha	1.20ha	0.86ha
Min	0.002ha	0.03ha	0.002ha	2.5ha
Max	3.5ha	2.67ha	0.025ha	2.67ha
% of HHs per categories of area cultivated – among 62, 41 and 39 cases respectively				
< 0.5ha (excluded)	16%	22%	15%	18%
0.5ha to 1ha	21%	34%	18%	36%
1ha to 1.5ha	21%	24%	23%	26%
>1.5ha (included)	42%	20%	44%	21%
% of HHs owning a plot next to the house	NA	54%	NA	NA
Average minutes spent to walk to the plot		1810		
Min	NA	0	NA	NA
Max	NA	120	NA	NA

Table 12. Land parcels owned and cultivated

a. Number of plots

During the first data collection, respondents were asked "how many land parcels does the HH cultivate?" and in the second data collection, they were asked "how many plots does the HH cultivate with foodcrops?" which is supposed to exclude all the plots with coffee or fruit tree plantations for example. However, it is most likely that neither enumerators nor farmers made this distinction, especially that the list of crops presented to enumerators to select what is grown on these plots also included non-foodcrops. As a result, it will be considered that the answers to both of the above questions refer to all the plots that a HH cultivates.

According to the above table, the average number of plots cultivated by CSPG members has very slightly decreased between 2013 and 2014. But this difference is too small to conclude that there is a real decrease in areas cultivated.

¹⁰ Includes plots that are supposedely immediatly next to the house.

This information could be cross-checked using some follow-up questions asked during the second round of interviews about whether plots were already cultivated the previous year or not. Nevertheless, no information was collected regarding plots that might have been cultivated in 2013 but were not anymore in 2014 making this cross-checking only partly possible.

In a few words, the result of this partial cross-checking revealed that for 61% of the respondents, the information provided on the number of plots cultivated in 2014 was coherent. For 14%, the information was incoherent (eight cases) and the remaining respondents gave incomplete answers so no conclusion could be drawn. Among the eight cases where data was incoherent, in six of them, the problem is probably due to an underestimation of the number of plots cultivated in round 1.

b. Area cultivated

The average area cultivated has also slightly reduced between 2013 and 2014: from 1.2ha to 0.86ha on average among respondents for which both data was available. This difference is significantly different¹¹ (while it wasn't for the number of plots). Note that according to SoL's MTS survey conducted in 2013 with 672 farmers, average Timorese farmers cultivate about 0.85 ha of food crop.

Again, given farmers' quantitative estimations are not necessarily correct, a probably more reliable information is farmers' answers to the qualitative question asked during the second round of interviews: "How does the TOTAL area of land with foodcrops cultivated by the household compare to last year?". As a result:

- For 64% of the respondents, the area cultivated remained the same.
- For 18% of these, the area cultivated decreased. Four persons explained this by saying they had less land in 2014 compared to 2013. For six respondents, the option "other reason" was selected but no details was then noted. However, it is possible that they had less time in 2014 to cultivate their own land as they were busy with the CSPG's production activities. Finally, one person said he couldn't get a tractor this year to plough his land and another one said that one of the plot he cultivated is farther this year.
- And for 18% of these, the area cultivated increased. The most common reasons given for this is that the family still had unused land (four cases) or that they believed they would more likely be able to sell their harvest in 2014 (four other cases). Other reasons were the fact that they had more seeds in 2014 (one case), they could rent a tractor this year (one case) or had more tools this year (one case).

When, comparing these answers to the figures reported for the areas cultivated in 2013 and 2014, only about 40% of the respondents provided quantitative data that was consistent with their qualitative perception of whether the area cultivated had increased, decreased or stayed the same. In many cases (30%), no comparison was possible because

¹¹ Paired samples T-Test result: Sig. (2-tailed) = 0.02, p<.05

either round 1 or round 2 quantitative data wasn't available. In the remaining cases, most farmers tended to either over-estimate the 2013 area or under-estimate the 2014 area.

In conclusion, it is likely that the average area cultivated by all HHs combined has remained the same between 2013 and 2014. But if it has changed, it has probably only slightly decreased, which could be because CSPG members have less time to cultivate their own land when they already spend a lot of time on the CSPG's land.

Interestingly, the average area cultivated varies significantly depending on the type of CSPG respondents are members of¹² (see Table 13).

	-	2013	2014	
Varieties grown by the CSPG	# of	Average	# of	Average
	cases	area (ha)	cases	area (ha)
Sele	16	1.3	11	0.6
Noi Mutin	16	1.7	10	1.1
Nakroma	18	1.4	11	1.2
Utamua	12	0.3	9	0.4

Table 13. Average area cultivated and variety grown by the CSPG

Clearly, Utamua CSPG members cultivate much smaller areas than other respondents. This is one of the reasons their PPI scores were also among the lowest in 2013. In other words, members of Utamua CSPGs are probably among the least wealthy of this sample.

Note that comparison was also made between area cultivated and work-time households allocate to agriculture but no significant correlation was observed (probably because data could be compared for only 19 cases).

c. Location of the plots

About half of the 2014 respondents said one of their plot is right next to their house and on average, they estimated it took 18 minutes to reach one of their plot.

Again, here, the reliability of farmer's quantitative answers can be questioned: among the 30 HH (54% of the 2014 sample) who said they have a plot immediately next to the house, ten said it actually took at least 15 minutes to walk to that plot.

d. Plots fully cultivated

During both rounds of data collection, CSPG members were asked: "Are all your plots fully cultivated (i.e. 100%, the whole available area)?". All respondents answered that they indeed fully cultivated all their plots besides three members who, at the time of the second data collection, specified that they didn't have enough labour to cultivate all their land. This information seems coherent with data presented in this next section: two of

¹² Anova Test result: in 2013, Sig. = 0.0001, p<.05 and in 2014, Sig. =0.006, p<.05

them stopped growing rice and one of them apparently grows less upland foodcrops. Surprisingly, all three earlier said they grew as much area at the time of the second data collection as they did before.

2.4.2. Diversity of crops grown

Table 14 presents data collected regarding the crops grown by the households. This data was obtained by crossing information collected through various questions (especially questions on which crops are grown on each plot and which crops are grown in general by the household).

Besides for maize, rice, peanut, cassava and sweet-potato, it is difficult to make consistent comparisons between the proportions of respondents growing each crop as questions were asked slightly differently in 2013 and 2014. Farmers also often omit to mention some of the crops they grow if a list of choices isn't read to them (which was the case for both surveys) and if enumerators do not conduct a more in depth interview. Therefore, it is very likely that most of the following percentages are underestimated.

	Total sample			
	2013	2014	Common sam	ple (56 cases)
	(64 cases)	(56 cases)	2013	2014
Maize, including:	88%	96%	89%	96%
Normal maize		83%		
Early maize		22%		
Other maize		9%		
Rice	39%	27%	36%	27%
Peanut	19%	29%	18%	29%
Cassava	70%	75%	71%	75%
Sweet-potato	44%	54%	45%	54%
Other root crops, including:	NA	48%		
Taro		93%		
Yam		4%		
Arrow root		59%		
Elephant foot yam		4%		
Beans, including:	2%	68%		
Pigeon pea		40%		
Red beans		3%		
String beans		90%		
Velvet beans		3%		
Sorghum		7%		
Other vegetables, including:	58%	86%		
Pumpkin		100%		
Cucumber		38%		
Fruits	42%	13%		
Coffee	40%	NA		
Coconut	34%	NA		

Table 14. Crops grown

Overall, the proportion of respondents growing each of the five main staple crops seems representative of the situation in Timor Leste with: maize and cassava being the most commonly grown crops, followed by sweet-potato (about 50%) and lastly rice and peanuts with about 30% of the sample in 2014. These proportions seem to have slightly increased between both data collections. This isn't the case for rice, for which a decrease could be observed. However, this decrease isn't statistically significant, whereas the increase in proportion of maize growers is statistically significant¹³.

Besides these five crops, a wide range of other crops are also grown with mainly vegetables, beans, root crops and some tree crops such as coffee (in Ermera mainly).

a. Varieties grown

During the first round of interviews, farmers were also asked to list the varieties they used for each of the five main staple crops they were growing. As farmers usually do not know the exact names of the varieties they grow, local names are often given which can create confusion, especially when one wants to distinguish local from improved varieties. Table 15 lists the varieties names as reported by farmers.

Crops	Name of the variety	% of farmers growing it
Maize varieties grown	Batar Boot	64%
(55 cases)	Sele	16%
	Batar Lais	13%
	Batar Local	7%
	Batar mutin	4%
	Hibrida	4%
	Arjuna	4%
	Batar kinur	2%
Rice varieties grown	IR64	36%
(25 cases)	Membramo	20%
	IR66	12%
	IR72	8%
	Dolaratus	8%
	R5	8%
	IR 65	4%
	Local	4%
	Mean local	4%
Peanut varieties grown	Local	100%
(12 cases)	Utamua	8%

Table 15. Varieties grown	(2013))
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¹³ Paired samples T-Test result: Sig. (2-tailed) = 0.044, p<.05 for maize and 0.058 for rice.

Crops	Name of the variety	% of farmers growing it	
Cassava varieties grown	Mantega	67%	
(43 cases)	Nona Metan	35%	
	Mutin	33%	
	Mina morin	28%	
	Tolantoka	7%	
	Local	7%	
	Mean	2%	
	Midar	2%	
Sweet-potato varieties	Kinur	76%	
(25 cases)	Mean	32%	
	Mutin	28%	
	Local	12%	

The first observation is that farmers grow a large range of varieties but very few farmers mentioned improved varieties (nine farmers said they grew Sele and one said he grew Utamua) even though they belong to CSPGs growing improved varieties. This will be discussed again in section 0. Given the difficulty to identify precisely to which varieties most of these local names correspond to, no further analysis of the above data will be made.

b. Area grown per type of crops

Whenever possible, the above information was linked to plot sizes enabling to make some estimations on the area grown for each type of crops: upland foodcrops (including maize, root crops, vegetables, peanuts, etc.), rice and tree crops such as coffee or fruit trees. However, this analysis was limited due to several factors: incomplete data on which crops are grown on the plots or unreliable/missing data on the size of some other plots. Results are presented in Table 16.

C 0	1 /	0	I J		
	Total s	amples	Common comple (E4 cases)		
Type of crops	2013	2013 2014 Common sa		liple (34 cases)	
	(62 cases)	(56 cases)	2013	2014	
Upland foodcrops (including maize, root crops,	52/0.77 ha	52/0.60 ha	49/0.75 ha	50/061 ha	
vegetables, etc.) sometimes grown with tree crops	55 / 0.7711a	52 / 0.00 Ha	40 / 0.7 5 ha	50 / 0.01 lia	
Rice, sometimes grown on same plot as tree crops	25/0.92 ha	15 / 1 21 ha	20/0.99 ha	15 / 1 21 ha	
or up-land foodcrops	25 / 0.92 Ha	15 / 1.21 11a	20 / 0.99 ha	15 / 1.21 lla	
Plantations with tree crops only (coffee, fruit trees)	21 / 0.68 ha	1 / 0.36 ha	21 / 0.68 ha	1 / 0.36 ha	

Table 16. Estimations of area grown per type of crop (Number of households owning such plots / Average size of such plots¹⁴)

¹⁴ All averages are among people who own such plots only

There isn't much difference between the first and second round of interviews in regards to up-land foodcrops. But the number of farmers who mentioned growing rice or plots with tree crops only has noticeably decreased. For plantations (mainly coffee in Ermera), the problem clearly comes from incomplete data collection itself during the second round of interviews (most likely those farmers still owned these coffee plantations in 2014). For rice, according to this data, the number of producers decreased (which is coherent with Table 14) but the area slightly increased. Note that the slight increase in area grown mainly comes from one farmer of the Nakroma CSPG Haburas in Lautem who was growing only 1ha of rice in 2013 and was then growing 5ha in 2014. Again, this decrease in area of rice grown isn't statistically significant¹⁵.

c. Quantity of seeds planted

During the second data collection, respondents were asked, for each of the five main staple crops, how much seeds was used during the last cropping cycle. The results are presented here (Table 17).

Crops	# of	Average quantity used	Minimum - maximum			
cases			quantity used			
Maize	44	38kg	1kg – 338 kg			
Rice	10	125kg	8kg – 300kg			
Peanut	10	4kg	1kg – 10kg			
<u></u>	40	10 sticks up to 800 bundles with one	bundle including from 50 to			
Cassava	40	200 sticks, and one stick providing about five cuttings				
Sweet-potato	30	10 sticks up to 10 bundles				

Table 17. Average quantity of seeds and cuttings used

For maize, the average quantity of seeds reported could be used to plant about 1ha of maize. This is higher than the average 0.6ha plots grown with upland foodcrops (as reported in Table 16), but still can be considered as consistent enough given the difficulty to collect accurate quantitative data from farmers and to convert these into a common unit.

On the other hand, for rice, the average quantity of seeds used seems very important: 125 kilos could be used to plant about 5ha while the average area reported is only about 1.2ha. This incoherence is mainly caused by data collected from five farmers of the Nakroma CSPG in Manatuto: 150 to 300 kg of rice seeds used to plant areas ranging from 0.5ha to 2.5ha.

¹⁵ Paired samples T-Test result: Sig. (2-tailed) = 0.35, p<.05

For cassava and sweet-potato, it wasn't possible to calculate the average number of cuttings used as the units used by farmers are very divers (different size of bundles, different length of the "sticks")

d. Irrigation

Data on whether the crops were irrigated or not was collected during the first round of interviews. As a result, 84% of the rice fields were told to be irrigated even though it is likely that in other cases, rice was also irrigated but data is missing. Note that one member of the Lautem CSPG Haburas said he also irrigates a maize plot.

2.4.3. Men and women roles in cultivation

In both data collections, a number of questions were asked regarding how men and women in the households share the agricultural tasks to be done as well as who mainly decides on important questions.

a. Gender of who cultivates each plot

In 2014, for each plot, data on whether it is men, women or both who cultivate the crops on each plot was collected. The results are presented here (Table 18). Note that answers given for different plots of the same household were always the same (but also, data on 17 plots are missing).

	% among 71 plots
Only men	5%
Mostly men	23%
Both men and women	59%
Mostly women	11%
Only women	2%

Table 18. Gender of who cultivates the parcels (2014)

The most common situation is that both men and women cultivate the households' parcels. A significant proportion of plots are also taken care of mainly by men (23%). Lastly, in only 13% of the cases, it is mostly or only women who cultivate the plots.

In general, by linking the above information with the crops grown on each plot, we can observe that taro, vegetables, fruits and sweet-potato which are mostly grown on plots where both men and women work together (more than 46% of the cases), are also grown, in second position, on plots that are mainly cultivated by women (13 to 18% of the cases).

b. Gender of who grows each crop

In another section, respondents were also asked whether it is men or women who are mostly involved in growing each of the crops cultivated by the family. The results are presented here.

	Maize (52)	Pumpkin (48)	Cassava (40)	String bean (34)	Sweet-potato (30)	Taro (22)	Cucumber (17)	Arrow root (16)	Peanuts (13)	Pigeon pea (11)	Rice (11)	Sorghum (4)
Only men	6%	10%	15%	9%	7%	18%	18%	13%		9%	9%	
Mostly men	25%	15%	23%	15%	17%	18%	18%	13%	15%	9%		50%
Men & women	60%	54%	58%	50%	57%	36%	41%	63%	62%	55%	91%	50%
Mostly women	6%	13%	5%	15%	13%	23%	18%	13%	15%	9%		
Only women	4%	8%		12%	7%	5%	6%		8%	18%		

Table 19. Gender of who grows the crops (2014)16

These results are quite coherent with the answers to the first question on gender (Table 18). To summarize findings of both questions in a few words:

- In more than 50% of the time, men and women work together to cultivate crops. Rice for example, is very much a "mixed gender crop". But this does not mean men and women do all the activities of the production cycle together. Indeed, tasks are often distributed between men and women according to their capacities.
- In second position, it is mainly men who are cultivating crops. Some crops that are mostly grown by men are maize and cassava.
- Lastly women are more involved in the production of vegetables such as string beans, pigeon peas or root-crops such as peanuts, taro or sweet-potatoes.

¹⁶ Only crops with information for more than one case are presented here.

c. Gender balance in decision making

During the first data collection, questions on who makes some of the important decisions related to the farm were asked to respondents.

	Men	Both	Women
Who decides which varieties to grow?	17%	69%	14%
Who selects seeds?	10%	61%	29%
Who decides when, where and at what price to sell the harvest?	22%	45%	33%

Table 20. Gender balance in decision making (2013)

Again, it appears that the most common situation is that men and women take decisions together or that both participate in selecting seeds. However, women also seem to participate significantly in selecting seeds and deciding on the modalities for selling the households' agricultural production. Indeed, women are often considered more thorough during seed selection: «Women know which seeds are good to be planted» (farmer in CSPG Aihatatu Haburas – Ermera). They also have a significant role in regards to selling crops: most sellers in the local markets are women.

2.4.4. Harvesting crops, storing and selling harvests

Questions related to harvests were asked in both data collections. But because the second round of data collection was in February-March 2014, some families hadn't harvested crops yet by the time they were interviewed. As a result, among respondents for whom information is available¹⁷:

- 66% of maize growing HHs had harvested maize by the time of the interview;
- All of the rice growing HHs who answered this question (11 cases) had harvested rice;
- 85% of the peanut producers had harvested peanuts by the time of the interview;
- Cassava leaves were harvested by 80% of the households and cassava tubers by 68% of the HHs;
- Sweet-potato leaves were harvested by 83% of the HHs and tubers by 77% of the HHs.

a. Months of harvests

Table 21 summarizes the main harvest periods for each of these five staple crops. For cassava and sweet-potato, distinction was made between harvests of leaves and tubers:

¹⁷ Data is missing for one maize, four rice,, three peanut and two cassava producers.
leaves are usually harvested before tubers, which explains why less respondents had harvested cassava and sweet-potato tubers at the time of the second interview.

	Round 1	Round 2		
Maize	February, <u>March</u> , April	February, <u>March</u> , April		
Rice	<u>June</u> , July, August	June, July, <u>August</u>		
Peanut	March , <u>April</u> , May	April, <u>May</u>		
Casaava	Luna August Ostahar	Leaves: May, June, July		
Cassava	June, August, October	Tubers: August, September, October		
Sweet-potato	July August October	Leaves: April May, June		
	July, hugust, October	Tubbers: June, July, August		

Table 21. Main months of harvesting staple crops18

b. Quantities harvested

Respondents provided information on the quantities harvested in local units (number of sacks, number of bundles of cobs, number of drums, etc.) which were then converted into kilograms using a conversion table.

Note that for the first round of interviews, harvested quantities were collected separately for each variety grown by the farmer. However, such details are not presented here (only total amounts are shown on the table here under) given the difficulty to ensure that varieties were named properly. Also, in many cases, farmers mentioned the same volumes of harvest for different varieties which suggests they didn't really know how much quantity of each variety they actually harvested.

¹⁸ Only the three months that were mentioned by the highest number of growers are shortlisted and shown in this table.

		Total samples						Reference ¹⁹	
	2013		2014		Common samples			References	
	# cases (% amon crop growers)	^g Harvest	# cases (% among crop growers)	Harvest	# cases	2013 harvest	2014 harvest	# cases	Harvest
Maize	46 (82%)	464	29 (54%)	254	21	296	290	632	271
Rice	25 (100%)	1971	11 (73%)	2522	10	2533	2275	242	651
Peanut	11 (92%)	70	10 (63%)	41	3	93	57	191	43
Cassava ²⁰	33 (73%)	31	25 (60%)	24	14	36	16	465	115
Sweet-potato	18 (64%)	264	23 (77%)	103	11	266	79	347	70

Table 22. Average harvested quantities (in kilograms)

Firstly, in order to get a general overview of how these quantities compare to "standard situations" in Timor Leste, average harvests were compared to data collected among random farmers across the country in 2013 (SoL's Mid-Term Survey). In nearly all cases, the amount harvested by these CSPG members are higher than the average harvests among the MTS respondents which probably is because CSPG members are more productive than average farmers.

Secondly, when comparing data among the same group of respondents ("common samples"), it appears that the average harvested amounts is always smaller in 2014 than in 2013. This reflects the apparent reduction of area grown as reported in Table 22 (except for rice which has slightly increased).

However, many crop growers are not represented in the above data (up to 46% of the maize growers missing for 2014 for example) which as a result, might not reflect the real situation. Indeed, in many cases, data on harvests could not be compared due to missing data or inability to convert volumes reported unit into kilograms or simply the fact that the crop wasn't harvested yet at the time of the second data collection.

Lastly, cross-analysis was conducted to see if the type of CSPG respondents belonged to could be related to the amount they harvest. What appears is that:

• Very clearly, the eight members of the Nakroma CSPGs for which rice harvest data was available had the highest average rice production in 2014: 3375 kgs vs 250kgs among members of Noi-Mutin CSPGs. Note that in particular, members of the Fela

¹⁹ The reference data refers to data collected in Seeds of Life's Mid-Term-Survey implemented in 2013.

²⁰ For cassava, harvested amounts are measured in "number of 25kg-rice-sacks" – except for the reference data which is in kilograms.

Hametin CSPG in Manatuto which was ranked A by the sub-district coordinator reported among the highest rice areas and harvests in 2014.

• Also, the 15 members of the two Noi-Mutin CSPGs had the highest average maize production in 2013 (603 kgs). One of them was ranked A by the sub-district coordinator in 2014.

c. Storing maize

61% of the maize growers of the first data collection21 said they usually store maize seeds and food separately while others store these together. Note that, in this sample, it is among members of maize CSPGs that the highest proportion of respondents said they store maize seed and food together (52% among maize CSPG members vs. 18% and 25% among rice and peanut CSPG members respectively). This is surprising given they are supposed to be the ones with a better understanding of how to store maize seeds. Table 23 presents how maize seeds and food are stored.

	Seeds and food stored together	Seeds and food stored separately (33 cases)		
	(21 cases)	Seeds	Food	
Hanged on top of the fire place	43%	6%	9%	
In drums	24%	15%	46%	
Bundles hanged in a tree	14%	6%	9%	
Jerrycan (or <i>bote</i>)	10%	67%	6%	
In sacks	10%	6%	30%	

Table 23. Maize storage

When stored together, the most common situation is to store maize cobs on top of the fire place in the kitchen. And when stored separately, the most common method is to store the pilled maize that will be used as food in drums or sacks and put seeds in plastic jerrycans. Among the 15 cases where members of maize-CSPGs store seeds and food separately, 80% said they use plastic jerrycans for the seeds while others use drums.

d. Selling crops

During the first round of interviews, for each of the five main staple crops, farmers were asked which variety they grew and how much of their harvest they had already sold. They were also asked if they had the intention to sell some later.

During the second round of interviews, farmers were asked if they had already sold part or all of their harvests (for all crops, not only the five main staple-crops).

²¹ Answers to this question are available for 54 maize growers among 56.

Table 24 summarizes the results of these questions.

	Quantity already sold in 2013 (# of farmers selling / average quantity sold22)	Plan to sell? 2013 (total sample)	Sold? 2014 (total sample)
Maize	7 / 300 kg	4 cases	9 cases
Rice	8 / 1059 kg	2 cases	3 cases
Peanut	2 / 20 kg		1 case
Cassava	10 / equivalent of sixteen 25kg- rice sack filled with cassava	3 cases	11 cases
Sweet-potato	4 / 90 kg		6 cases

Table 24. Selling crops

The first observation is that in 2013, not many households had sold some of their harvests. Overall, 31% of the 2013 respondents growing at least one of the above staple crops reported having sold some of it. This proportion went down to 25% in 2014. Interestingly, there is a significant difference between CSPGs in regards to selling crops: none of the Utamua CSPG members mentioned selling some of their harvest in 2013 neither in 2014, while 29% of Nakroma CSPG members did and 46% of Sele/Noi Mutin CSPG members did so in 2013. Utamua CSPG members were also those having the highest proportion of poorer farmers (Figure 2).

Secondly, most of the households who said they had no plan to sell crops during the first data collection indeed didn't do so. In many cases also, comparison between answers provided by the same households during the first round (question on plans to sell crops) and second round (question on has the crop actually been sold) wasn't possible due to missing data. And finally, none of the farmers who first said they would sell crops actually did so (neither the other way around):

- In many cases, farmers who first said they wouldn't sell crops actually did so. That was the case for seven maize producers, seven cassava producers, four sweet-potato producers, three rice producers and one peanut producer.
- And in a few cases also, farmers who first said they would sell crops finally said they didn't do so during the second data collection. That was the case for four persons.

In reality, such comparison are quite difficult to make given many farmers do not plan in advance if they will sell or not their products. Most likely, decisions on whether to sell or not are made at harvest time, when there are surpluses.

²² All average quantities are calculated only among farmers who did sell some or all of their harvests already.

2.5. Adoption of improved varieties

2.5.1. Familiarity with improved varieties

Respondents were asked, for each of the improved varieties, if they knew about it and grew it. During the first interview, these questions were asked to everyone (whether they grew or not the corresponding crop) while, during the second interview, these questions were asked only to those who grew the corresponding crops (for example, questions on whether they knew and grew Sele were asked only to people growing maize).

The following charts show that all (but three persons in 2014) respondents know at least one improved variety. Most of them know at least about two varieties.



Figure 3. Number of improved varieties respondents are familiar with

Also, in 2014, it seems that respondents know about more varieties than they did in 2013. However, when comparing case by case, on average the 56 respondents re-interviewed in 2014 know about one variety less than they did in 2013. This again reflects the difficulty to collect accurate data on different type of varieties, even among CSPG members themselves.

Table 25 presents the detailed data on familiarity with improved varieties and helps understand better this unusual situation.

		Total sa	mples	5	Common samples			Reference ²³
	2013		2014		Common samples			% among respondents
	#	% among all	#	% among	# 62606	% for	% for	not growing these
	cases	respondents	cases	crop growers	# cases	2013	2014	varieties
Sele	64	75%	53	79%	53	77%	79%	27%
Noi Mutin	64	61%	53	72%	53	66%	72%	16%
Nakroma	61	52%	11	100%	11	91%	100%	23%
Utamua	64	45%	12	58%	12	67%	58%	14%
Ai Luka	63	25%	40	15%	40	25%	15%	11%
Hohrae	62	23%	29	14%	29	21%	14%	9%

Table 25. Knowing improved varieties

Here are the main observations:

- As shown in several other surveys as well, Sele, Noi Mutin and Nakroma are the most well-known improved varieties.
- Ai Luka and Hohrae are always among the least recognized improved varieties: 75% or more of these CSPG members said they still haven't heard about Ai Luka and Hohrae. These varieties would clearly benefit from more communication and diffusion across the country (which was done through massive distributions of cuttings early 2013 and 2014).
- On average, more respondents know about Sele, Noi Mutin and Nakroma in 2014 than in 2013 (common sample). But surprisingly, in a number of cases, respondents said they knew one of the improved variety during the first data collection but then didn't know about it during the second data collection. That was the case for Sele (four cases), Noi Mutin (five cases), Utamua (one case), Ai Luka (eight cases) and Hohrae (three cases). A possible explanation would be that a different household member was interviewed in 2013 and 2014.
- The proportions of CSPG members who know about improved varieties are all significantly higher than the proportions among all rural HHs in the country (see reference data in last column). But note that the reference data does not include cases of people growing the varieties themselves (which is the case for the data of this survey).
- What seems very unlikely is the fact that some members of Nakroma and Utamua CSPGs (four and two farmers respectively) said in 2013 that they didn't know the varieties Nakroma and Utamua. It might be that it was not the CSPG members himself who was interviewed but someone else in his family.

²³ The reference data refers to data collected in Seeds of Life's Mid-Term-Survey implemented in 2013. Proportions were calculated among 577, 656, 631, 648, 656, 643 farmers who do not grow respectively Sele, Noi Mutin, Nakroma, Utamua, Ai-Luka or Hohrae.

These observations reflect was SoL has also observed in adoption surveys: farmers (and some MAF employees themselves) have difficulties identifying and naming properly varieties. There are several reasons to this situation. Among others: (1) the rapid loss of genetic purity of maize varieties resulting in crops with mixed characteristics, (2) the fact that farmers tend to use several local names for the same variety based on the appearance of the crop, it's origin, etc. However, it is desirable that farmers are able to identify and name the varieties they grow, as this will help dissemination of improved varieties. Indeed, farmers could more easily access a variety if they were able to clearly name it and therefore, collect information on where to find it. They could also have more easily access to information related to these varieties: how to grow it, what are the advantages, etc.

In conclusion, because CSPG members are probably one of the most important actors in this information dissemination process, it seems crucial that they are well-informed about all the improved varieties that have been released in the country, including those that their CSPG do not grow. This is even more important for Utamua, Ai Luka and Hohrae which are not as well-known as other varieties. Note that it is likely that this situation has changed now, in 2015, after two important distributions of Ai Luka and Hohrae cuttings across the country (early 2013 and 2014).

2.5.2. Growing improved varieties

a. Cross-checking information on growing improved varieties

Another proof of the difficulty to collect precise data on the varieties grown, and in particular for improved varieties, is the inconsistency in the information provided by respondents in 2013. Indeed, information on potential improved varieties grown was asked in three different places (part 5, 6 and 7 of the questionnaire) but information provided along these different sections were most of time inconsistent:

- In part 6, where respondents were asked about the source and other characteristics of the improved varieties they grew, nine respondents were growing Sele but one among these had not mentioned growing Sele in part 5 or 7. Cross-checking different information revealed that, most likely, this person did not grow Sele anymore at the time of the first interview or had maybe never grown Sele. Indeed, the "supposedly Sele seeds" were sourced from a local market in Ermera in 2012 and one of the reason for selecting these seeds was that there was no other choice which is very unlikely in a local market where most of the corn is local. As a result, the information provided by this respondent in part 6 was deleted.
- In part 6 again, two respondents said they were growing Nakroma but again, none had mentioned growing Nakroma in Part 5 or 7. One of them explains in part 7 that he knows the variety but has not grown it during the 12 months prior the interview. It is likely that he has grown it in 2011 (information in part 6). The other one says he doesn't know the variety (part 7) but also says he was growing it in

2006 (part 6). During the second interview, both of these respondents say they know this variety but do not grow it as they do not have seeds. In conclusion, it is likely that both of these CSPG members were actually growing Nakroma a few years prior the first interview but not anymore in 2013 neither in 2014. The information provided by these two respondents in part 6 was therefore deleted.

- Lastly, in part 7 (on the familiarity with improved varieties) most of the respondents who said they were growing improved varieties had not mentioned it earlier in part 5 or 6. Still, this information was almost always considered correct as all of these respondents were first asked if they really knew what each of the improved variety were and replied positively.
- In six cases only, (three for Nakroma and three for Utamua), respondents who said they knew and grew these varieties in part 7 were finally considered as not growing them because all along the interview, they said they didn't grow the corresponding crops (rice or peanut respectively). For the three cases who mentioned they knew and grew Utamua for example, it is likely that they in fact meant they grew Utamua as part of the CSPG activity only (on the CSPG land) but not on their farms as they all belong to Utamua CSPGs.
- In a few cases also, farmers said they didn't know an improved variety but then said they grew it (part 7). Obviously, for such cases, it was considered that farmers were NOT growing the improved variety.

Data on growing improved varieties was also compared to the information provided in both interviews regarding the seeds respondents received from their CSPGs. As a result, eight persons mentioned having received and planted seeds from their CSPG but had earlier said they didn't grow that crop or didn't have seeds to plant at the time of planting, etc. More specifically, this was the case for three persons of a Sele CSPG, three persons from a Nakroma CSPG, one from a Noi Mutin CSPG and one from an Utamua CSPG. It is possible that these respondents meant they received seeds from their CSPGs and plan to plant it as part of their CSPGs' activities (on the CSPG land) or on their own farm but during the following season (2014-205). Because of this confusion and the impossibility to verify this information, these cases were not considered (but three among these eight respondents are anyway adopters of other varieties).

In conclusion, this information shows how unreliable farmers' answers can be when they are simply asked to list the varieties they grow and no further clarifications are required or direct observations are conducted.

The data presented in this section includes only cases where information provided by respondents was considered coherent. It is likely that there are in fact more adopters but that these were not identified as such due to incomplete information.

Also, due to these inconsistencies, detailed information on these improved varieties is missing for most adopters in 2013. Such data is available for eight Sele growers and one Utamua producer (presented later in section 2.5.4).

b. Proportion of adopters in 2013 and 2014

Figure **4** presents the summarized data on adoption of improved varieties among CSPG respondents. An adopter grows at least one of the improved varieties mentioned above. Note that the proportion of adopters are calculated among respondents who grow at least one of the following five main staple crops: maize, rice, peanuts, cassava, and sweet-potato. In 2013, two respondents apparently didn't grow any of these.



Figure 4. Proportion of adopters in 2013 and 2014

Firstly, the proportion of adopters has significantly increased between both rounds of interviews²⁴: from 52% to 68%. When looking at the 49 cases where information was available for both interviews, the increase is even greater: from 51% to 76% of adopters.

It is likely that by 2015, nearly all CSPG members will have adopted at least one improved variety. In other words and in the context of these eight CSPGs, it appears that about three years are required from the start of a CSPG to ensure each member grows improved varieties and therefore, an even longer period is probably needed until improved varieties are diffused to a significant proportion of farmers outside of a CSPG.

In detail, among the 49 common cases between both rounds of interviews:

- 20 were already adopters and continued growing improved varieties in 2014 (most are growing Sele or Noi Mutin),
- 17 were not growing improved varieties in 2013 but started doing so in 2014 (most started growing Sele or Noi Mutin),
- 7 remained none-adopters,
- 5 were growing improved varieties in 2013 but stopped doing so in 2014.

²⁴ Paired samples T-Test result: Sig. (2-tailed) = 0.009, p< .05

The following data explains more in detail the situation of the five respondents who apparently stopped growing improved varieties:

- Two were growing Nakroma in 2013 but didn't mention growing rice in 2014. It is possible that these two households were actually still growing rice, and thus maybe Nakroma, but forgot to mention it.
- Two were growing Nakroma and one was growing Sele in 2013 but all stopped doing so in 2014 because they apparently had no more seeds to plant.
- One respondent who grew Sele in 2013 said he didn't know the variety Sele in 2014. This is probably due to a miss-understanding or because different HH members were interviewed in 2013 and 2014.

The above information confirms that some respondents in 2014 might be growing improved varieties but weren't counted as adopters due to incomplete/inconsistent data.

c. Adoption per variety

	Total samples				Common complex			
	201	13	2014		common samples			
	# cases	%	# cases	%	# cases	% for 2013	% for 2014	
Sele	56	39%	53	53%	49	37%	55%	
Noi Mutin	56	20%	53	32%	49	20%	35%	
Nakroma	25	40%	11	27%	10	50%	30%	
Utamua	12	25%	12	58%	5	20%	60%	
Ai Luka	45	7%	40	3%	32	6%	3%	
Hohrae	28	7%	30	10%	21	10%	5%	

Table 26. Adoption of improved varieties among crop growers

The most commonly grown varieties are Sele and Noi Mutin, followed by Nakroma and Utamua. Less than three respondents grew Ai Luka or Hohrae during both round of interviews.

The proportions of people growing improved varieties has increased in most cases except for Nakroma and Ai-Luka (figures among all crop growers). For Nakroma, three persons (including two from a Nakroma CSPG) said they grew Nakroma in 2013 but not anymore in 2014 because they had no more seeds or not enough labour. Five others (including four from Nakroma CSPGs) stopped growing rice in 2014. For Ai-Luka, out of the three persons who said they grew Ai Luka in 2013, apparently one didn't grow cassava anymore in 2014 and another one grew cassava but said he didn't know Ai Luka in 2014. Such information is incoherent and reflects again the problems mentioned earlier.

d. Number of improved varieties grown by adopters



Figure 5. Proportion of adopters per number of improved varieties grown

In most cases, adopters grow only one improved variety. It is very rare that adopters grow more than two improved varieties. In 2013, one adopter grew three varieties (Sele, Utamua and Ai Luka) and another one from the CSPG "Haburas Aihatatu" (Ermera) grew five varieties (Sele, Noi Mutin, Nakroma, Ai Luka and Hohrae). In 2014, five persons grew three improved varieties (mainly Sele, Noi Mutin and Utamua) and one person grew four improved varieties (the same person who grew five improved varieties in 2013).

e. Growing the variety multiplied by the CSPG:

On average, 81% of adopters in 2013 and 76% of adopters in 2014 are growing the improved variety that their CSPGs are producing (Figure **6**). More interestingly, 63% and 55% are growing another improved variety and more than half of these grow this other variety on top of their CSPGs' variety. This is very encouraging as it shows that being part of a CSPG also helps accessing other improved varieties.



Figure 6. Type of improved varieties grown by adopters (total sample)

Interestingly also, during the second data collection, it appears that members of Sele CSPGs tend to grow mainly their CSPG's variety only while members of Utamua CSPGs rather grow other improved varieties than their CSPG's variety.

f. Factors related to adoption

• District

During the second round of interviews, a positive correlation was observed between the district and the fact that the person is an adopter or not. As a result:

- It is in Ermera that the highest proportion of adopters can be found. This
 is probably related to the fact that the three CSPGs sampled in Ermera
 all grow Sele or Noi Mutin (see next point): 93%
- Ermera is followed by Manatuto with 67% of adopters,
- Finally, the two CSPGs sampled in Lautem have about 36% of adopters.

• Crops grown by the CSPG

Interestingly, during the second data collection, there is a statistically significant correlation²⁵ between the type of CSPG respondents belong to and the fact that they are themselves adopters or not. Indeed about 90% of the respondents who are members of Sele, Noi Mutin and Utamua CSPGs are adopters but only 25% of Nakroma CSPG member are themselves adopters. This is mainly because of the situation with the CSPG Haburas in Lautem where several respondents who were adopters in 2013 stopped growing rice in 2014, or were not reinterviewed in 2014 or didn't have enough seeds to replant Nakroma in 2014.

• Poverty likelihood

No significant difference was observed between the PPI scores of adopters and others. However, during the first round of interviews, a statically significant difference was observed between the average PPI scores of adopters who grow one or two improved varieties²⁶: adopters growing two improved varieties are less likely to live under the national poverty line than those who grow only one improved variety.

Also, people who grow only their CSPG's variety are less likely to be poor than those who grow another variety²⁷ (mainly Utamua CSPG members).

²⁵ Chi-square Tests result: Asymp. Sig. (2-sided) = 0,00006, p<.05

²⁶ Anova Test result: Sig. = 0.021, p< .05

²⁷ Anova Test result: Sig. = 0.015, p< .05

2.5.3. Reasons for not growing improved varieties

a. At the time of the first data collection

All the respondents who knew about an improved variety but didn't grow it were asked if they would be interested to do so. As a result, all answered that they would be interested except five cases for Nakroma, three for Sele, one for Noi Mutin and one for Utamua. The reasons given are that:

- For Nakroma: they do not have rice fields,
- For Sele: reasons given are not related to the question. However, two among these are Sele CSPG members who started growing Sele in 2014,
- For Noi Mutin: the farmer said he is still waiting to see if the results of this variety are good enough,
- For Utamua: the farmer said he doesn't like the taste of this variety.

Overall, this feedback is very positive: the very large majority of farmers would be in favour of growing more improved varieties if they had access to it.

The following data compares information on farmers' willingness to grow improved varieties in 2013 and what has actually happened in 2014:

- All six persons who knew about Utamua and were interested in growing it did start growing it in 2014 (two of them are in Utamua CSPGs and four in Noi Mutin CSPGs).
- 12 out of the 18 respondents who said in 2013 that they would be interested to grow Sele, did start growing it one year later,
- Similarly, nine out of the 20 respondents who were interested in growing Noi Mutin did start growing it one year later,
- Only one out of the five persons who wanted to grow Nakroma was indeed growing it by the time of the second data collection.

Overall, except for Nakroma, this confirms that most CSPG members would indeed be interested in growing other improved varieties if they had access to it.

b. At the time of the second data collection

During the second interview, respondents who knew about an improved variety but didn't grow it were asked why they didn't grow it yet. The reasons given are compiled in Table 27.

Variety	# of	Reasons given (multiple answers possible)							
	cases	No seeds	Wait free seeds	No land	Other				
Solo	1.4	64.0%	14.0%	14.0%	1 case: prefers Noi Mutin				
5616	14	0470	1470	1470	1 case: too sensitive to weevils				
Noi Mutin	1.4	14 670/	1004	100%	2 cases: not resistant to big rains				
NOI Mutili	14	07 70	1070	1070	1 case: NA				
Nakroma	8	100%			1 case: no labour				
Ai Luka	5	100%	20%						
Hohrae	1	100%	100%						

Table 27. Reasons for not growing an improved variety

The above data is in the same line as findings from the first round of interviews: the main reason for not growing improved varieties is not having access to it.

2.5.4. Details on adopters and the varieties grown

a. First round of interviews (2013)

As mentioned earlier, detailed information on adopters is available for only eight respondents growing Sele and one growing Utamua (the Utamua producer being also one of the eight Sele producers).

The information provided by these eight farmers is summarized here:

- One of them (member of the Utamua CSPG in Manatuto "Remis") started growing Sele and Utamua in 2008. He first received these seeds from an NGO and continued growing these two varieties until 2013.
- The seven other farmers growing Sele started growing it in 2010 (two cases), 2011 (three cases) and 2012 (two cases). Five among these said they received Sele seeds from the government, one said from an NGO and one said it was his own seeds. None of them belong to a Sele CSPG but it is likely that they were part of a farmer group in the past which benefited from seed distributions.
- Note that, among these eight respondents, six started to grow the improved varieties before the creation of the CSPG.
- All Sele growers besides one said Sele is much more productive than local varieties. Only one Sele producer and the Utamua producer believe the improved varieties are as productive as local varieties.

- The reasons mentioned for selecting Sele are: the variety is more productive (seven cases), taste is good (six cases), it is resistant to wind (six cases), better suited to local climate (six cases), seeds were given for free (five cases), and lastly for its colour (two cases) and it's easy storage (two cases).
- Finally, all these respondents said they planned to replant Sele (and Utamua) in the next growing season. All, besides two, plan to replant the same area as they did before. Two only plan to replant a smaller area of Sele (no reasons given).

Five among these eight respondents were re-interviewed in 2014. Thus, this latest information could be compared to what actually happened the following year for these five respondents. As a result:

- Three replanted Sele: two on a bigger area and one on a similar area as in 2013.
- The person growing Utamua continued growing Utamua on the same area.
- The two other Sele producers stopped growing Sele: one because he had no seeds and another one said he didn't know what Sele was (as mentioned earlier, it was probably a different respondent than in 2013).

These results are very anecdotal (they represent only five adopters while there are actually 27 respondents who were adopters in 2013 and were re-interviewed in 2014). Therefore, no extrapolation should be made from these statements.

b. Second round of interviews (2014)

For the second round of interviews, adopters were asked about the source of the improved varieties they grow and how the area grown compares to the area grown the previous year. These data are available for all 38 adopters interviewed in 2014 and are presented in the following tables.

	# of cases	Possible sources (multiple answers possible)							
Variety		Free from	Free from the	Free from	Bought in	Other			
		the CSPG	government	an NGO	the market	Other			
Sele	28	21	3	5	1				
Noi Mutin	17	13		2		2			
Nakroma	3	1	2						
Utamua	7	4	2	1					
Ai Luka	1	1							
Hohrae	3	3							

m 11 00 0	- c.	1	00404		c		
Table 28. S	source of impro	oved varieties -	- 2013 (number o	of cases i	reported	only)
10.010 =0.0	/ o al 00 01 mpi 0				1 00.000		<u> </u>

As expected, most adopters received improved seeds directly from their CSPGs, even for Hohrae and Ai Luka cuttings which are not varieties multiplied within these eight CSPGs (Table 28). Indeed, the three adopters growing Ai Luka and/or Hohrae belong to two CSPGs in Ermera who have received cassava and sweet potato cuttings early 2013 and early 2014.

Interestingly, some of the persons who declared having received seeds from their CSPG weren't talking about the variety of their CSPG. That was the case for four persons who received Noi Mutin seeds, three persons who received Sele seeds, two persons who received Utamua seeds and one who received Nakroma seeds. Apparently, the three CSPGs sampled in Ermera (two growing Noi Mutin and one growing Sele) have contributed a lot in the process of distributing various improved varieties to their members.

Table 29 presents answers given by adopters to the question "How does the area grown under the improved variety now compare with the area last year?".

Note that a significant number of respondents answered this question even though they apparently did not grow the corresponding improved variety in 2013. Obviously, such cases are not included in the following results.

	# of cases growing	Area grown in 2014 is					
Variety	the same variety	Smaller than	The same	Larger than			
	in 2013 and 2014	in 2013	as in 2013	in 2013			
Sele	13	5	5	3			
Noi Mutin	6	2	2	2			
Nakroma	2	1	1				
Utamua	1	1					
Ai Luka	1	1					
Hohrae	1	1					

Table 29. Area grown in 2014 compared to the area grown in 2013 (# of cases reported)

Most farmers tend to grow smaller areas in 2014 than they did in 2013 or just about the same area. It is likely that the time they spend on the CSPG's land prevents them from growing larger areas on their own farms.

2.6. Food security

An important part of this survey was meant to collect information on the household's food security situation. For this reason, different food-security indicators were used and the results obtained were cross-checked in order verify the information provided by respondents.

In this section, we will first present indicators that were used in both data collections: the consumption of self-grow food crops and its related period of food-shortage, the Months of Adequate Food Provisioning (MAHFP), a section on the purchase of staple crops such as rice and maize and the consumption of wild foods, and finally the Copping Strategy Index (CSI).

Secondly, we will present three other food-security indicators that were used during the second data collection only: the Food Insecurity Experience Scale (FIES), the Household Huger scale (HHS) and the Household Dietary Diversity (HDD).

2.6.1. Consumption of self-grown foodcrops

a. Self-grown foodcrops availability

Respondents were asked to identify during which months of the last year, their family was able to eat food-crops grown by the household. The average number of months per HH is mentioned in Table 30. In the second part of the table, results are shown only for cases where valid information was available for both rounds of interviews.

		Total sar	nples		C			
	2013		2014		Common samples			
	# cases	# months	# cases #	months	# cases #	months 2013	# months 2014	
Maize	54	8.6	51	6.4	46	8.5	6.4	
Rice	26	9	11	9.4	11	10.3	9.4	
Peanuts	11	3.2	11	1.9	5	4.6	2.2	
Cassava	43	9.2	37	5.1	30	9.5	5	
Sweet potato	23	3.8	29	2.1	19	4.1	2.3	

Table 30. Average number of months of consumption of self-grown foodcrops28

Nearly all the above data shows a decrease in the number of months when these five foodcrops can be eaten. This finding is in line with what was reported earlier that for most crops, areas and harvested volumes have decreased between 2013 and 2014 (cf. Table 22).

²⁸ All the proportions are calculated among crop growers with valid data.

However, it is interesting to note that, in SoL's 2014 Adoption Survey, for which the sample interviewed is representative of rural Timor-Leste HHs, the average number of months when self-grown maize could be consumed is significantly smaller than what has been reported by these CSPG members: about five months vs. six to eight months among these CSPG members. The same observation can be made for rice: about five months of self-grown rice consumption vs nine to ten months among these CSPG members.

Clearly, these CSPG members produce higher quantities of maize and rice than an average HH in Timor-Leste (cf. Table 22).

The above data was also compared according to the crops grown by the CSPG. Surprisingly, the only statistically significant results related to the consumption of cassava²⁹:

- In 2013, members of maize CSPGs have the highest number of months of consumption of self-grown cassava (11 months vs. five and seven months among members of peanut and rice CSPGs respectively).
- In 2014, members of rice CSPGs have the highest number of months of consumption of self-grown cassava (eight months vs. four and two months among maize and peanut CSPG members respectively).

Such findings would need to be verified as it could also be influenced by the way some enumerators ask the question on consumption of cassava (for most families, cassava can be eaten year round).

b. Food shortage

For the purpose of this survey, "food shortage" was defined as a period when households have none of the following self-grown food crops to consume: maize, rice, peanut, cassava or sweet potato.

	Total s	samples	Common	sample	Reference	
	2013 2014		(38 cases)		MTS	AS
	(61 cases)	(40 cases)	2013	2014	(672 cases)	(671 cases)
% of respondents experiencing at least one month of food shortage	33%	80%	29%	79%	62%	81%
Average # of months of food-shortage	1.8	2.8	1.6	2.9	2.7	4.2
Min	0	0	(0 0		
Max	12	9	12	29		

Table 31. Food shortage

²⁹ Anova Test results: Sig. = 0.00001 for 2013 and Sig. = 0.005 for 2014, p<.05

Table 31 shows that a much higher proportion of respondents experienced food shortage in 2014 compared to 2013 and that the period of food shortage is about one month longer in 2014 than in 2013. This is directly related to the fact that average durations of consumption of self-grown food crops was much more important in 2013 than in 2014.

As mentioned earlier, it is possible that production of maize, rice, cassava, peanut and sweet-potato have slightly decreased because CSPG members are busier with the group's activities. Still, it is very unlikely that it could have resulted in such an important increase in food-shortage periods.

Several observations highlight some problems with the above data:

- Comparison between 2013 and 2014 was possible for about two thirds of the sample only because for more than 30% of the respondents of the second round of interviews, data on consumption of at least one of the staple crops they grew was missing or incomplete. It is possible that results would have been different with more complete data.
- Also when compared to average data collected across the country during SoL's MTS and the 2014 AS, it appears that the food-shortage data in 2013 was much lower than the average situation in the country.
- For the questions on consumption of these five staple crops, two months (February 2013 and March 2013) were overlapping between the first and second round of this case study. Therefore, in order to verify the reliability of the data, answers given for these two months were compared. As a result:
 - Depending on the crops, data was consistent for 40% to 84% of the respondents for which data could be compared. More specifically, the proportion of respondents who gave consistent answers was 66%³⁰ for maize (out of 46 cases), 68% for rice (out of 11 cases), 80% for peanuts (out of five cases), 40% for cassava (out of 30 cases), and 84% for sweet-potatoes (out of 19 cases).
 - For peanuts, cassava and sweet-potato, all the cases where inconsistent answers were given were because in 2013, people said they could eat these produces during those two months, but in 2014, they finally said they couldn't.
 - For maize and peanuts, that was also the case for the majority of the inconsistent answers. The most extreme cases being that 33% of the respondents said they could eat maize in February 2013 during the first interview, and then said they couldn't during the second interview.

³⁰ Percentages given here are average proportions for both months February/March 2013.

In conclusion, there are two possible bias in the data on food-shortage:

- an over-estimation of the consumption of self-grown foodcrops by respondents in 2013,
- And an un-representative sample in 2014 because data was missing for more than a third of the 2014 sample.

2.6.2. Months of Adequate Household Food Provisioning (MAHFP)

The MAHFP measures improvements in household food access over time. Respondents are asked to indicate during which of the last 12 months their family didn't have enough food / experienced hunger. Table 32 presents the main findings.

	Total samples			Common samples			References		
	201	2013		4	#	2012	0 0014	MTS	AS
	# cases	Data	# cases	Data	# cases	2013	2014	(672 cases)	(702 cases)
% of HH saying they have experienced hunger in the last 12 months	64	61%	56	48%	56	63%	48%	84%	82%
Average # of MAHFP <u>among ALL HHs</u>	64	8.3	55	10.3	55	8.2	10.3		
Min		0		3		0	3		
Max		12		12		12	12		
Average # of MAHFP <u>among HHs who</u> experienced at least 1 month of hunger	39	6	26	8.4	22	5.8	8.3	8	8.4
Min		0		3		0	3		
Max		11		11		11	11		

Table 32. Average MAHFP

The proportion of respondents saying their HH has experienced hunger in the past 12 months has greatly decreased between 2013 and 2014: from 63% to 48% (common cases). This decrease is probably linked directly or indirectly to farmer's involvement within CSPGs. Possible explanations for such a decrease could either be that families have access to more self-produced food (which is apparently not the case here, at least for the five main staple crops), either that they have access to more food from the outside (and therefore have more income to buy this food).

Also, note that the proportion of HHs experiencing hunger was already significantly lower in 2013 than what it was among rural HH of Timor Leste at the same period (reference data). This might indicate that members of the eight CSPGs included in this survey were slightly better-off than average rural HHs in the country.

Among HHs who experienced at least one month of hunger, the MAHFP has increased significantly: from 5.9 months to 8.4 months (common cases). In 2014, it is equivalent to what it is on average among rural HH in the country (last column).

When looking at each district separately, Lautem is the district which started with the lowest MAHFP (6.8 vs. 8.9 and 9.5 for Ermera and Manatuto) but where the MAHFP has increased the most: from 6.8 to 9.9 (including ALL HHs).

a. The "hungry season"

Figure 7 presents the proportion of HHs experiencing hunger each month: the first round of interviews focused on the period from April 2012 to March 2013 and the second round of interviews focused on the period from February 2013 to January 2014.



Figure 7. Proportion of HHs experiencing hunger per month

As observed in most surveys conducted within the SoL program, the "hungry season" happens mainly during the end of the dry season-begining of the rainy season, with a pick from November to February.

Secondly, for the two months where there is an overlap between both rounds of interviews (February and March 2013) there is a very important difference between the answers given in 2013 and in 2014. As observed for the consumption of self-grown staple crops, in most cases, during the first interview, many respondents answered positively (hunger during those months) but during the second interview, they answered negatively (no hunger during those months). In fact, the reality is probably in between. Indeed, even though the situation has most likely improved between 2012 and 2013, it is unlikely that it has changed so radically in such a short period of time.

b. Cross analysis with data on food-shortage

This increase in MAHFP is not in line with the previous data on availability of self-grown staple crops. In order to understand this, further analysis was conducted.

When conducting a cross-analysis between food shortage and MAHFP (Figure **8**), it appears that the longer is the period of food shortage, the smaller is the MAHFP. Which suggests that the "food-shortage" and MAHFP data collected are quite coherent. This is true except for the last category (9-12 months of food-shortage) which actually reflects only four cases and is therefore probably not representative enough.



Figure 8. Average MAHFP per category of food shortage³¹

The fact that food-shortage and MAHFP are quite coherent between each other (especially for the 2013 data which had more complete data on food shortage) suggests that the apparent increase in food-shortage (Part b) is probably more the result of missing data for more than 30% of the 2014 sample than of an over-estimation of the 2013 data itself (even though this probably played a small role as well).

PPI scores of respondents for which food shortage data was missing in 2014 was compared to the PPI scores of the rest of the 2014 sample. As a result, the average PPI score of respondents whose food-shortage data was missing in 2014 is eight points higher than the one of other respondents. And consequently, this suggests that they also might be more food-secure than other respondents. As a result, the increase in food-shortage between 2013 and 2014 might not have been so important if the 2014 data included these missing cases (more than 30% of the total 2014 sample).

³¹ For each category of food-shortage, the number of cases for which the average MAHFP could be calculated is reported in brackets (for 2013 and 2014 respectively).

c. Cross analysis with other factors

The main factor that was found to have a statistically significant influence on the average number of MAHFPs is the variety grown by the CSPG³².

		2013	2014		
by the CSPG	# of cases	Average # of MAHFPs	# of cases	Average # of MAHFPs	
Sele	18	7.7	18	11	
Noi Mutin	16	9.9	13	10.5	
Nakroma	18	9.2	14	11.2	
Utamua	12	5.9	10	7.5	

Table 33. MAHFP and variety grown by the CSPG

Overall, what appears in Table 33 is that members of CSPGs producing improved maize or rice varieties enjoy more MAHFPs than members of Utamua CSPGs. This is in line with earlier findings about members of the Utamua CSPGs sampled in this survey: they are on average poorer than others, cultivate smaller areas and rarely sell crops (which makes sense if they already have difficulties ensuring their families' needs).

No statistically significant correlation was found between the MAHFP and the PPI scores neither between the MAHFP and the fact that respondents are adopters or not. Still, it is interesting to note that adopters usually experience more MAHFPs than non-adopters:

- In 2013, on average non-adopters experienced about 7.4 MAHFPs vs. 9 for adopters,
- In 2014, on average non-adopters experienced about 9.9 MAHFPs for non-adopters vs. 10.4 for adopters.

³² Anova Test results: Sig. = 0.029, p< .05, for 2013 and Sig. = 0.0001, p< .05, for 2014

2.6.3. Purchasing rice and maize

a. Purchasing rice

	20	Total sa	amples	1.4	Со	mmon san	Reference	
	20	2013		14 Dete	# 62606	2012 2014		33
	# cases	Data	# cases	Data	# Cases	2015	2014	
Proportion of HH buying rice	64	88%	56	89%	56	89%	89%	94%
Average number of months buying ³⁴	56	8.6	50	9.3	50	8.8	9.3	9.4
Average quantity of rice bought per month	56	24kg	50	34kg	43	24kg	32kg	32kg
Min		1kg		1kg		1kg	1kg	10kg
Max		120kg		150kg		120kg	150kg	600kg
Average quantity of rice bought per year	56	290kg	45	284kg	43	289kg	278kg	378kg
Min		6kg		10kg		9kg	10kg	
Max		1440kg		1080kg		1440kg	1080kg	

Table 34. Purchasing rice for family consumption

Table 34 presents the situation regarding the purchase of rice among CSPG members. As expected, most respondents (89%) bought rice during the 12 months prior the both interviews. This is quite similar to what was observed in SoL's mid-term survey but the average quantity purchased per year is much lower (290kg in 2013 vs. 378kg among the MTS respondents) which suggests these CSPG members do not need as much rice as average farmers.

The months during which more HHs buy rice correspond to the months when HHs run out of maize (October-November until February).

There is no significant difference between the 2013 and 2014 data regarding the proportion of HHs buying rice or the quantity purchased or the number of months people purchase rice. Indeed, in 2014, HHs bought on average 11 kgs less rice than in 2013 (for 12 months). In other words, respondents' involvement in these CSPGs didn't impact on the purchase of rice.

Note that there is a two-months overlapping period between the questions asked in 2013 and 2014: in both data collections, respondents were asked if they bought rice in February and March 2013. A quick comparison revealed that answers given in 2013 and 2014 for these two months were the same for about 70% of respondents which seems very reasonable given farmer's difficulty to provide accurate quantitative data.

 ³³ The reference data refers to data collected in Seeds of Life's Mid-Term-Survey implemented in 2013.
 Proportion of HHs buying rice was calculated among 672 respondents interviewed accross the country.
 ³⁴ All the data in this table starting from here are calculated among respondents buyig rice only.

• Extra information collected during the first interviews:

Most of the farmers interviewed in 2013 who said they were buying rice even though they also grew rice said they were doing so because they didn't grow enough paddy (11 out of 18 cases). Others gave various reasons: to feed the labour working on rice fields, because they don't have enough time to mill the paddy, etc.

In 2013, respondents were also asked if "compared to two years ago, the amount of rice they buy now is smaller or bigger than before". As a result:

- 9% said they buy much smaller quantities now (so in 2013).
- 4% said they buy smaller quantities now.
- 63% said they buy about the same amount now than before.
- 9% said they buy bigger quantities now.
- 16% said they buy much bigger quantities now.

Therefore, the average tends to be to buy more rice in 2013 than in 2011, which reflects a general situation in the country where maize as a staple food is progressively replaced by rice. Respondents were then asked to explain why they were buying more or less rice but only two persons answered.

• Correlation between the amount of rice purchased and other factors:

The following factors have a statistically significant correlation with the quantity of rice respondents purchased yearly:

- Area of rice grown in 2014: the larger rice area grown, the less rice is purchased³⁵,
- Volumes harvested in 2013: the larger the volume harvested, the less respondents buy rice³⁶,
- Number of months of "food-shortage": the fewer months of food-shortage, the less families buy rice (in both round of interviews)³⁷,
- Crops grown by the CSPG: members of rice CSPGs (Nakroma) are the ones buying the smallest volumes of rice in 2014 compared to maize or peanut CSPGs³⁸,
- Number of MAHFP: the higher the number of MAHFPs, the less families buy rice (in both round of interviews)³⁹.

All of these findings confirm that the main reason for buying rice is that farmers do not grow enough volumes themselves to fulfil their families' needs.

³⁵ Anova Test result: Sig. = 0.0004, p<.05

³⁶ Anova Test result: Sig. = 0.053

³⁷ Anova Test result: Sig. = 0.002, p< .05 for 2013 and Sig. = 0.002, p< .05 for 2014.

³⁸ Anova Test result: Sig. = 0.04, p< .05

³⁹ Anova Test result: Sig. = 0.02, p< .05 for 2013 and Sig. = 0.004, p< .05 for 2014.

b. Purchasing maize (2014)

In the second data collection, respondents were also asked whether they bought maize for consumption in the last 12 months or not. As a result, only nine respondents said they did (16% out of 56 cases), and this during an average period of 2.2 months. They also declared buying on average 31kgs of maize per month and 46kgs per year (which doesn't correspond to the average number of months during which respondents buy maize).

Even though this difference isn't statistically significant, it is interesting to note that the eight persons who do not buy maize harvested on average more maize than others in 2014 (268kgs vs. 218 kgs among people who usually buy maize).

Interestingly, contrary to what was observed with the purchase of rice, no correlation was found between the quantity of maize purchased and the number of months of FS or the number of MAHFPs. In other words, families who experience more months of hunger do not necessarily buy more maize than others.

The main learning here is that rice is certainly a preferred food compared to maize, irrespective of the families' poverty level (no correlation with the PPI scores was found). In Timor Leste, rice seems to progressively replace maize as the main staple food.

2.6.4. Consumption of wild foods

During the first data collection (2013), 39% of respondents said their families ate wild foods in the past 12 months. This data is quite similar to the result of SoL's mid-term survey which was also implemented in 2013: 45% out of 672 farmers had consumed wild-foods in the past 12 months.

In 2014, only 27% of the 56 respondents interviewed consumed wild foods in the past 12 months. Interestingly, one year earlier, 43% of these 56 respondents had consumed wild foods. In other words, the proportion of respondents consuming wild foods has significantly decreased between 2013 and 2014. The various analysis in this section will highlight the fact that consumption of wild foods is a good indicator of the level of food-security of a family. As a result, this decrease in consumption of wild foods between 2013 and 2014 is probably closely linked to the fact that CSPG members are able to better meet their families' needs in 2014 through increased production or increased purchases of food from the outside.

During the first data collection, when more detailed information was collected on the type of wild foods collected, respondents specified that they ate on average about two different sorts of wild foods. Wild lesser yam ("kumbili" in Tetum) is definitely the most common wild-food consumed by farmers followed by bitter bean ("koto moruk" in Tetum). Among other wild foods are different sorts of yams such as the elephant's foot yam ("maek"), "uhi", "kua" or "kontas". Note that all respondents said it is always the HoH who collects wild foods, sometimes together with other HH members (five cases out of 25).

a. Main season of consumption and hungry season

In both data collections, respondents were asked to specify during which months they use to collect wild-foods. Results are presented in Figure 9 together with data on hungry months as reported in Part 2.6.2.



Figure 9. Proportion of households collecting wild foods and experiencing hungry months

The first observation is that there is clearly a season for collecting wild-foods which is mainly during the dry season: from July to October (light and dark green bars). Interestingly, the profiles of the curves are slightly different between 2013 and 2014:

- In 2013, consumption of wild foods was spread over a longer period (average duration of consumption of wild foods per household: 2.8 months),
- In 2014, most of the consumption happened in August-September 2014 (average duration of consumption of wild foods per household: 2.1 months).

Secondly, comparison with data on households experiencing hunger reveals that in both rounds of interviews, consumption of wild foods is more important at the start of the "hungry season" (August-October). However, consumption of wild foods stops before the end of this hungry season (which can last up to January-February), probably because there are less wild-foods to collect at this period. Still, it is clear that wild-foods represent a very important complement for the whole family during periods of food-shortage.

In the same line, it is interesting to note that, in both rounds of interviews, respondents who consume wild foods harvested smaller volumes of rice and maize than respondents who did not eat wild foods. In other words, consumption of wild foods compensates the lack of self-produced foodcrops.

Note that respondents in 2013 were asked to specify if some wild foods were collected at different times than others but all, except one, gave a general answer for all the wild foods they used to collect.

b. Availability of wild foods over years

In 2013, respondents were asked "how difficult would you say is finding wild foods compared to two years ago?". As a result:

- 24% find it much more difficult than before
- 16% find it a bit more difficult than before
- 32% find it as difficult as before,
- 20% find it a bit easier than before and
- 8% find it much easier than before.

No significant tendency can be observed from these figures. It seems that it is slightly more difficult to find wild foods in 2013 than in 2011 which could mean resources in wild foods tend to progressively reduce in the forest.

c. Reasons for consuming wild-foods

During the first data collection, respondents were asked if they ate wild foods because of need (no other food available) and not simply because they like to eat such crops.

As a result, all respondents said that their families ate wild food because of necessity. They were then asked to specify during which months wild foods were eaten by necessity but all (besides three persons) didn't make any difference between the months they usually eat wild foods (Figure **9**) and months they eat wild foods because of need. This confirms that the main reason for the most families to consume wild foods is because they have very limited, or no access to other sources of food during certain periods of the year (dry season mainly). Linked to this, it appears that "food shortage" is statistically correlated to the consumption of wild foods⁴⁰: in 2014, HHs consuming wild foods experience on average 4.7 months of food shortage vs. 2.1 months among those who did not consume wild foods.

During the second data collection, the question was asked in a more open manner: "For what reasons did the household eat wild food?". Answers given were:

- "Because it is easy to get when it is in season" (seven among 15 cases)
- "Because we can get these for free" (six cases)
- "Because we like the taste of it" (three cases)
- "Because we do not have any other food" (three cases)

⁴⁰ Anova Test result: Sig. = 0.02, p< .05

They were also asked: "When did the household eat wild foods". Answers given were:

- "When we still had other foods. The wild food was extra food." (nine cases)
- "When we had no other food AND when we had extra food. We ate wild foods at different times in the year." (four cases)
- "When we had nothing else to eat." (two cases)

This information gives a more complete understanding of the situation: wild foods are very rarely the only food families can consume during the hungry season. They mostly come as an additional and easily accessible source of food for the family.

2.6.5. Coping Strategy Index (CSI)

a. What is a Coping Strategy Index?

The Coping Strategy Index (CSI), describes people's behaviour when not enough food is available in a household. The higher the CSI score, the higher the level of vulnerability to food security.

For this survey, a total of 26 behaviours – or coping strategies – were selected to be representative of the Timor-Leste context. For each of these coping strategy, respondents had to estimate how often they applied it:

- during the months where the HH didn't have enough food (which is usually in December-January) first data collection,
- in the past 30 days or seven days prior the interview (which was conducted in February 2014) second data collection.

Therefore, in both cases, answers reflect about the same period of time.

As questions were asked differently from one data collection to another, a slight processing of the data was required in order to compare answers easily. This mainly consisted of combining some coping strategies and answers together. The methodology used to calculate the total CSI scores is detailed in Appendix II.

b. Overall CSI scores of households

Table 35 presents CSI scores of households (HH CSI) among respondents having completely answered to the 21 CSI questions⁴¹. According to this indicator, very clearly, households are more food-secure one year after having joined a CSPG:

- The CSI score is more than three times smaller in 2014 compared to 2013 (among the HH interviewed twice),
- And the proportion of HHs not having to use any coping strategy in 2014 has more than doubled compared to 2013.

⁴¹ Among the 26 coping strategies mentioned earlier, 21 were part of both data collections and were therefore used to compare CSI scores between 2013 and 2014.

This very positive finding is likely (partly) linked to the impact that the participation in a CSPG has on its members and their families.

	Total s	amples	Common sample (38 cases)			
	2013 (55 cases)	2014 (44 cases)	2013 2014			
Average HH CSI	15.2	3.4	16.3	4.6		
Min HH CSI	0	0	0	0		
Max HH CSI	45.5	23	45.5	23		
Proportion of HHs with a HH CSI of 0	22%	50%	18%	42%		

Table 35. HH CSI scores for 21 common coping strategies

c. Reduced CSI

In Table 36, a "reduced CSI" (rCSI) was also calculated. This reduced CSI includes only five coping strategies widely spread across the world and has been developed to enable comparison of food security across different countries. It is calculated using a universal set of severity weightings for each of the five behaviours (see Appendix II). Extensive research has demonstrated that the reduced CSI reflects food insecurity nearly as well as the "full" or context-specific CSI.

As a result, among the 38 HHs that were interviewed twice, an even higher proportion of HHs have reduced the use of coping strategies between 2013 and 2014: the rCSI is more than four time smaller in 2014 than it was in 2013.

Also, interesting findings can be made when comparing the situation in these eight CSPGs to the situation in Timor Leste in general (last column⁴²). In 2013, the average rCSI among all 55 HHs having answered these questions was nearly three times what it is on average in Timor Leste the same year (8 vs. 3). One year later, it is exactly the same as the average Timor-Leste rCSI.

⁴² Data collected in the "Timor Leste Food and Nutrition Survey 2013", UNICEF, 2014.

	Total samples		Common sample	Reference (1270 cases)	
	2013 (55 cases)	2014 (56 cases)	2013	2014	
Average HH rCSI	8	3	8.6	1.6	3
Min HH rCSI	0	0	0	0	0
Max HH rCSI	32.5	23	29.5	11.5	46
Proportion of HHs with a HH rCSI of 0	33%	66%	29%	68%	NA

Table 36. Reduced CSI (rCSI)

Comparison was also conducted with the results of a food security survey conducted in seven provinces of south-east Indonesia by UN agencies in 2010⁴³. However, in this other survey, a slightly different set of coping strategies was used to calculate the rCSI. Therefore, the standard rCSI that was used for this survey with CSPG members was recalculated using this other methodology in order to coherently compare results.

Comparison shows that among the seven districts surveyed (*Manggarai, Rote Ndao, Sumba barat, TTS, Alor, Sumba Timur, Kupang*), the mean rCSI in *Kupang* (closest to Timor-Leste) is exactly the same with the one calculated among the 55 CSPG members in 2013, which is 6.5. In 2014, this slightly revisited rCSI went down to 2 only. All the other south-east Indonesia districts surveyed by the UN agencies had higher rCSI (9.1 on average among the seven districts).

In other words, according to this indicator, one could say that the food security situation among the CSPG members surveyed in 2013 was equivalent to the overall situation in *Kupang* three years earlier but has very much improved in a one year period.

d. Reduced CSI and other factors

A number of statistically significant differences were identified between the CSI and other data collected during this survey:

- During the second data collection, rice growers were among the ones with the lowest CSI scores while peanut growers were among the ones with the highest CSI scores⁴⁴. But note that no correlation was identified with the type of CSPG.
- During the first and second data collection, the higher the CSI score, the lower the number of MAHFPs⁴⁵, which makes sense. Indeed, the more people have to use coping strategies, the less likely their family had experienced months of adequate food provisioning.

⁴³ "Nutrition Security and Food Security in Seven Districts in NTT Province, Indonesia: Status, Causes and Recommendations for Response", 2010, FAO, UNICEF and WFP.

⁴⁴ Result of Chi-Square test: Symp. Sig. (2-sided) = 0.01, p< .05 for rice and 0.008 for peanut.

⁴⁵ Anova test results: Sig. = 0.07, p< .05 for 2013, Sig.=0.04, p< .05 for 2014.

- During the first data collection also, the higher the CSI, the bigger volumes of rice the family had to buy during the year⁴⁶. This also makes sense: the more households have to use coping strategies, the more food-insecure they are and the more rice they have to buy to face this food insecurity.
- During the second data collection, the higher the CSI, the more months households consumed wild foods⁴⁷.

These findings do not provide a new understanding of the situation but are useful to identify which indicators are more relevant or provide a more realistic picture of the situation than others. In this case, it seems that the MAHFP can be considered as a good indicator of the HH's food security situation.



Figure 10. Members from a CSPG in Ermera receive peanut seed and Noi Mutin seed for their group seed plots

⁴⁶ Anova test result: Sig. = 0.02, p< .05

 $^{^{\}rm 47}$ Anova test result: Sig.= 0.004, p< .05

e. Average scores per coping strategy

Table 37 presents the results obtained for each coping strategy (CS) in 2013 and 2014 as well as some comparison with the situation in the country.

		2013		2014	Timo	or Leste ⁴⁸
Coping strategy	# of	% not	# of	% not	# of	% not
	cases	using CS	cases	using CS	cases	using CS
CS applied at least once in a week						
1. Eat less preferred or less expensive foods	55	38%	56	73%	1270	40%
2. Limit portion size at mealtimes	55	40%	56	79%	1270	61%
3. Reduce number of meals eaten in a day	55	49%	56	93%	1270	40%
4. Restrict consumption by adults in order for small children to eat	55	66%	56	93%	1270	71%
5. Feed the working members of the household at the expense of nonworking members	55	55%	56	98%		
6. Send household members to eat elsewhere	55	94%	56	100%	1270	88%
8-18. Borrow food/Rely on help from a friend or relative	55	73%	56	93%	1270	38%
9. Borrow money to buy food	55	71%	56	84%		
10. Purchase food on credit	55	91%	56	100%		
19. Gather wild food	55	66%	56	95%		
20. Go hunting	55	100%	56	98%		
22. Skip entire days without eating		Not asked	56	98%	1270	94%
CS applied at least once in a month						
7. Spend saved money	55	31%	49	65%	1270	68%
11. Harvest and eat immature crops	55	47%	55	76%		
12. Consume seed stock held for next season	55	69%	56	68%		
13. Sell chickens, ducks, etc.	55	42%	52	77%		
14-15. Sell pigs, goats or sheep	55	56%	51	75%		
16. Sell cattle	55	86%	51	94%		
17. Sell agricultural tools	55	96%	51	98%	1270	80%
21. Worked for food only	55	95%	56	100%		
23. Sent children to live with relatives	No	ot asked	56	100%		
24. Sold or bartered household items to buy food	No	ot asked	51	98%	1270	93%
25. Rented out land	No	ot asked	51	98%		
26. Sold land	No	ot asked	51	100%	1270	99%

Table 57. Data per copilig strategy (CS	Table 37.	Data per	· coping	strategy	(CS)
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In brief, the CSs that were the most frequently used in 2014 are:

• For weekly strategies: limiting portion size at mealtimes and eating less preferred/expensive foods.

⁴⁸ Timor Leste Food and Nutrition Surveym 2013, UNICEF, 2014.

• For monthly strategies: spending saved money, consuming seed stock, eating immature crops and selling small animals (chickens, ducks, pigs, goats).

But, among these different strategies, consuming seed stock is the only one that hasn't reduced since 2013. It was already something used by about 69% of the HHs in 2013. Indeed, this is a quite common practice in Timor Leste, even though one could think that CSPG members would be more careful than others to preserve quality seeds for the next crop.

As reflected with the rCSI above, when compared to a number of CSs assessed across the country (last column), four CSs were more frequently used in 2013 than the average in Timor Leste but then appeared to be less used in 2014 than they are on average in the country. These four CSs are:

- Eat less preferred or less expensive foods,
- Limit portion size at mealtimes,
- Restrict consumption by adults in order for small children to eat,
- Skip entire days without eating.

f. Gender and age impact of coping strategies

The 2014 questionnaire also included a set of follow-up questions regarding who in the family was impacted by a number of CSs, according to their gender and age. Table 38 shows the results for ten strategies which were applied at least by one HH.

Coping strategy	# of cases	All HH members	Adult men	Adult women	Boys	Girls	Young boys & girls	Men	Wo- men	Men & women
Eat less preferred or less expensiv	^e 16	12	3	3			1			
Borrow food	4	4								
Borrow money to buy										
food Borrow money	9	7			1	1	1			
to buy food										
Go hunting	1	1								
Gather wild foods	3	1	2	2						
Limit portion sizes at mealtimes	12	3	7	7			2			
Reduce number of meals eaten in a day	4	1	3	3						
Skip entire days without eating	1		1	1						
Restrict consumption by adults in order for small children to eat	4									4
Feed the working members of HH										
at the expense of non-working	1								1	
members.										

Table 38 IIse	of coning strateg	ies according to	gender and age
1 able 50. 0se	of coping strateg	sies accoruing to	genuer and age

Most of the above strategies are usually applied by all HH member equally. There appears to be no difference between men and women but rather between adults and children. Indeed, limiting portions at meal times, eating wild foods, reducing the number of meals eaten in a day and skipping entire days without eating are all strategies that are mainly applied by adults (both men and women) rather than children.

2.6.6. Food Insecurity Experience Scale (FIES)

As mentioned earlier, the FIES was used only during the second round of interviews. This tool is an experience-based metric of severity of food insecurity that relies on people's responses to a series of eight questions regarding their access to adequate food. The first three questions reflect a state of mild food-insecurity, the second set of three questions reflect a state of moderate food-insecurity and lastly, two questions reveal a state of severe food-insecurity.

The answers given to these eight questions are presented in Table 39.

FIE	S questions:	% among total sample (56 cases)
Du	ring the last 12 MONTHS, was there a time when:	
1.	You were worried you would run out of food because of a lack of money or other resources?	39%
2.	You were unable to eat healthy and nutritious food because of a lack of money or other resources?	39%
3.	You ate only a few kinds of foods because of a lack of money or other resources?	40%
4.	You had to skip a meal because there was not enough money or other resources to get food?	23%
5.	You ate less than you thought you should because of a lack of money or other resources?	30%
6.	Your household ran out of food because of a lack of money or other resources?	13%
7.	You were hungry but did not eat because there was not enough money or other resources for food?	7%
8.	You went without eating for a whole day because of a lack of money or other resources?	0%

Table 39. Answers to the eight FIES questions (2014)

This detailed information was summarized by categorizing households according to their answers (see Figure **11**):

• HHs answering "no" to all eight questions are "food secure".

- Questions 1 to 3 refer to the HHs' concern about how to procure food and the need to compromise on the quality and variety of the food. HHs answering "yes" to at least one of these questions and "no" to other questions were included in the category "mild food-insecurity".
- Questions 4 to 6 reflect a situation where HHs do not only worry about the quality of the food they eat but also its quantity. As a result, HHs answering "yes" to at least one of these questions but answered "no" to question 7 and eight were included in the category "moderate food-insecurity",
- HHs answering "yes" to either of the last two questions were included in the category "severe food-insecurity".



Figure 11. FIES categories (2014)

Firstly, note that an important proportion of the total sample (41%) do not suffer from food-insecurity according to this indicator.

Secondly, 50% of the sample answered positively to at least one of the first three questions but most of them also answered positively to other questions as well. As a result, only 18% of the total sample can be categorized as "mild-food insecure".

Next, for the three questions specifically related to mild food security, "eating less than you thought" was experienced by 30% of the sample, followed by "skipping a meal" (23%) and finally "running out of food" (13%). The proportion of HHs experiencing each of these three conditions decreases as the severity of the situation increases.

Overall, 34% of the 2014 sample can be identified as suffering from moderate food-insecurity.

Lastly, the highest level of food-insecurity refers to experiencing hunger within the family. Only 7% (four households) of the 2014 sample said they were hungry but did not eat because there was not enough money or other resources for food. But none of these had to skip an entire day without eating.
Here again, a number of statistically significant correlations were identified:

- According to this indicator, members of Nakroma CSPGs suffer less from food insecurity than members of members of Utamua or Sele and Noi Mutin CSPGs⁴⁹. Members of maize improved varieties are those with the highest proportion of members suffering from moderate food insecurity: 42% vs. 29% and 18% among members of rice and peanut improved varieties CSPGs.
- In the same line, it appears that nearly all of the respondents who grow rice are food secure (12 out of the 15 families growing rice in 2014). 60% of these families growing rice are members of Nakroma CSPGs (the rest are members of Noi Mutin CSPGs).
- Very significant correlation was also identified with the CSI score⁵⁰: the more families use coping strategies, the more food insecure they are on the food insecurity experience scale. Actually, a lot of the FIES questions are very much similar to some of the coping strategies that were used to calculate the CSI score.
- Finally, there is a significant correlation with the number of MAHFPs⁵¹: the more food insecure are the families according to the FIES scale, the less they experience MAHFP. Definitely, the number of MAHFPs is a valuable indicator of the state of food insecurity of respondents.

2.6.7. Household Hunger Scale (HHS)

The household hunger scale is a very simple food-security indicator which measures the households' food access and in particular helps identify cases of severe food-insecurity. A set of three questions are asked to respondents to assess how often the family had to face situations of severe food-insecurity in the 30 days prior the interview.

This tool was used only during the second data collection.

	Nama	Rarely	Sometimes	Often
	Never	[1-2 times]	[3-10 times]	[> 10 times]
In the past 30 days was there ever NO FOOD TO				
EAT OF ANY KIND in your house because of lack of	82%	11%	7%	0%
resources to get food?				
In the past 30 days did you or any household				
member GO TO SLEEP AT NIGHT HUNGRY	93%	5%	2%	0%
because there was not enough food?				

Table 40. Answers given to the HHS questions (56 cases)

⁴⁹ Result of Chi-Square test: Asymp. Sig. (2-sided) = 0.01, p<.05

⁵⁰ Result of Anova test: Sig. = 0.0002, p< .05

⁵¹ Result of Anova test: Sig. = 0.0005, p<.05

	N	Rarely	Sometimes	Often
	Never	[1-2 times]	[3-10 times]	[> 10 times]
In the past 30 days did you or any household				
member GO A WHOLE DAY AND NIGHT WITHOUT	0506	106	204	006
EATING ANYTHING AT ALL because there was not	9370	470	2 70	070
enough food?				

The main observation is that most respondents did not have to face any of the three situation mentioned above. The rare families who did so only experienced it a few times.

Example 1 and the second se

The above answers were then compiled into a "HHS score" (Figure **12**).

Figure 12. Household hunger categories

In summary, during the month prior the second round of interviews, 93% of the respondents did not suffer from hunger or only a little and 7% only suffered from moderate hunger. This is even more significant given the second round of interviews was conducted in February-March 2014 which means the HHS questions were supposed to cover months when many families usually experience hunger (31% of the 2014 respondents said they experienced hunger in January 2014).

In conclusion, none of the families interviewed were in a situation of severe food insecurity during the month prior the second interview and probably during the rest of the year. In fact, according to the HHS, more than 80% of the families experienced no hunger at all.

These results should however be qualified in the light of other findings of this survey. Firstly, according to the FIES, there are four households (7% of the 2014 sample) who suffered from severe food insecurity in 2013 (12 months). Also, even though the very large majority of these families did not suffer from severe hunger in 2013, many had to

cope with limited productions by eating less preferred food, reducing portions' size, consuming wild-foods or purchased rice, etc.

Note that the only statistically significant correlation with another variable is with the CSI score⁵²: households experiencing moderate hunger according to the HHS, have higher CSI scores (i.e. use more coping strategies) than households experiencing no or little hunger.

2.6.8. Household Dietary Diversity (HDD)

During the second data collection, Households' Dietary Diversity (HDD) was also assessed by asking respondents to describe the foods (meals and snacks) that the family ate or drank the day prior the interview. After the interview, enumerators then had to reorganize this information and classify these into 12 standard food-groups.

Results are presented in Table 41.

Food group	Examples	
Vegetables	Sweet pepper, dark green/leafy vegetables (incl. cassava	90%
vegetables	leaves), all other vegetables, including wild vegetables	
Cereals	Maize, rice, wheat, sorghum, barley or any other grains or	89%
Gereals	foods made from these (e.g. bread, noodles, porridge)	
Spices, coffee, tea	Coffee, tea (green, black, herbal), salt, black pepper, etc.	86%
Oils, fats	Oil, fats or butter added to food or used for cooking	61%
Sweets	Sugar, honey, sweetened soda or sugary foods such as	53%
Sweets	chocolates, sweets or candies	5570
Fruits	Banana, mango, pineapple, papaya, etc.	47%
Roots, tubers	Cassava, sweet-potato, potatoes, taro, white yams, turnips, etc.	37%
Pulses, legumes, nuts	Beans, peas, lentils, nuts, seeds or foods made from these	28%
Fish, seafood	Fresh or dried fish or shellfish	23%
Meat, poultry, offal	Pork, chicken, beef, lamb, goat, duck	21%
Eggs	Eggs from chicken, duck or any other egg.	16%
Milk, milk products	Milk, cheese, yogurt or other milk products	12%

Table 41. Proportion of respondents per food group (2014)

⁵² Result of Anova test: Sig. = 0.00004, p<.05

As expected, the two most common food groups consumed the day prior the interview are cereals and vegetables. Fish or meat were consumed by only about one-fourth of the families interviewed.

Note that six persons specified that the day prior the interview was not "a normal day for the foods that they ate or drank". One of them said he was attending a ceremony and others didn't give details. But, no major difference was observed between the diet of these six respondents and others (probably because there were only few such cases).

More important is the "HDD score" which is obtained by adding up one point for each of the food groups consumed by a family. This HDD score can then be used to compare groups of respondents according to different criteria.

		% of cases	HDD score
Average HDD score		57	5.7
	Min HDD score		1
	Max HDD score		12
Average HDD score per district*			
	Ermera	29	7.0
	Lautem	15	4.3
	Manatuto	13	4.5
Average HDD score per adopter or not			
	Adopter	38	6.2
	Non-adopter	13	5.0
Average HDD score per varieties grown	by the CSPG*		
	Sele	18	7.8
	Noi Mutin	14	5.4
	Nakroma	14	4.5
	Utamua	11	4.5
Average HDD score per household CSI			
First and second qu	artile combined	22	5.6
	Third quartile	12	5.8
	Fourth quartile	10	6.2
Average HDD score per PPI score			
	First quartile	6	5.5
	Second quartile	6	5.5
	Third quartile	7	5.9
	Fourth quartile	6	6.3

Table 42. HDD score

* Factors that have a statistically significant influence on the HDD scores (Anova tests) are marked with stars (*).

As shown in Table 42, the average HDD score is 5.7 (i.e. about five to six food groups were consumed by the family the day prior the interview). Respondents of Ermera on average have a higher HDD score and respondents of Lautem have the lowest average HDD score. This is also related to the varieties grown by the CSPG. Indeed, on average, respondents who are part of Sele or Noi Mutin CSPGs have a higher HDD score than others (Sele and Noi Mutin are the two varieties grown in the three CSPGs sampled in Ermera).

Other factors do not have a statistically significant influence on the HDD score but still, one can note that respondents with PPI scores belonging to the first and second quartile (i.e. households who are more likely to be poor) tend to have a lower average HDD scores, which makes sense: HDD score of 5.5 vs. HDD score of 6.3 for example for households with PPI score of the fourth quartile.



Figure 13. Measuring of a CSPG's maize seed harvest, Lautem

This longitudinal study covered a fairly short period of time (two years) which involves that CSPGs might only had a limited impact on their members by the time of the second interviews. Still, a number of interesting findings should be highlighted to conclude this study.

Firstly, for the overall economic situation of the families sampled in this study, it appears that the proportion of households living with less than 2.5/day went down from 81% in 2013 to 75% in 2014⁵³.

Secondly, regarding the agricultural profile of these families, it is interesting to note that, even though the area cultivated and the crops grown are about the same as for average Timorese farmers, the CSPG members sampled tend to harvest larger quantities and obviously, grow more improved varieties than others.

Between both interviews, it seems that respondents increased the diversity of crops they grow (except for rice which was grown by less respondents in 2013-14). The quantitative data collected also revealed that areas cultivated on average stayed the same but volumes harvested decreased slightly (except for rice). However, the reliability of quantitative data in such surveys should always be questioned.

On the other hand, participation in CSPGs has definitely supported farmers' access to improved varieties. Indeed, the proportion of adopters has significantly increased between both rounds of interviews: from 52% to 68% when looking at all the sample and from 51% to 76% when looking at the common sample only⁵⁴. It is likely that by 2015, nearly all CSPG members will have adopted at least one improved variety. Consequently, significant diffusion outside of the CSPGs will probably be visible after this period only.

CSPGs are also bridges for farmers to access other improved varieties than those grown by their CSPG: more than half of the sample grows another improved variety than their CSPG's variety. But it is also important to highlight that familiarity with and access to the improved varieties *Ai Luka* and *Hohrae* was still very limited in 2014.

Lastly, regarding the food security situation of these families, the two main indicators which were used in both interviews (MAHFP and CSI) revealed a valuable improvement of the situation:

- A significantly lower proportion of farmers experienced hunger after two years of involvement in the CSPGs sampled (from 63% in 2013 to 48% in 2014 among common cases) and the number of MAHFPs has considerably increased (from 5.9 months in 2013 to 8.4 months in 2014 among common cases).
- The use of coping strategies has also reduced considerably: the rCSI score is more than four times smaller in 2014 than it was in 2013.

⁵³ Proportions calculated among 22 cases only from a total of 64 cases.

⁵⁴ 49 common cases.

Of course, these changes cannot be totally attributed to their participation in CSPGs but it has probably partly contributed to it. As a result, according to the FIES, 40% of the households surveyed during the second interview were food secure in 2013-14. 53% suffered from mild or moderate food insecurity and 7% only were suffering from severe food insecurity.

Section	Specific question/part	Problem	Action taken
Part 1	HoH name	For 4 cases (G5, 6 H 1, H2) no name of HoH	Cross-checked with rest of questionnaire and filled in names
		Wrong data entry for the name of the HoH of number 42, 50, 56, 57 and 58	After checking on paper form: changed to the correct name.
		Wrong data entry for the name of the respondent of number 56, 57 and 58	After checking on paper form: changed to the correct name.
Part 2	Household composition	On case (respondent H3): not clear if 8 or 9 HH members because said 9 but gave detail only on 9 persons	Assumed it was indeed 9 persons and added 999 in the columns where the information of the last HH members was supposed to be entered (name/age/gender/school)
	Information on gender	One case (33) with wrong gender	Corrected after DC2
	Information on age	Several cases (nb 11, 27, 28. 37, 57): wrong age entered	Corrected after DC2
	Information on school	Several HH members whose age was not in the range 8-17 years old also had information on school (not required) One respondent (HH nb 15) had the wrong	Deleted school information for HH members not in the range 8-17 years old. Corrected the information (not going to school =>
		Information entered	going to school)
Part 3	PPI question 1	Among 64 cases, 46 cases had inconsistent data regarding the number of HH members: the PPI code entered was different from the total number of HH members entered later on.	Assumed that the correct data is the data where the total number of HH members and their details is listed and corrected the PPI data accordingly.

Cleaning of the first data set (first round of interviews)

Section	Specific	Problem	Action taken
	question/part		
	PPI question 2	Among 64 cases, 23 cases had inconsistent data	Assumed that the correct data is the data where
		regarding the schooling situation of young HH	the HH members where listed and information
		members aged 8 to 17 years old: the PPI code	was given on each person. Correct the PPI data
		entered was different from the information given in	accordingly.
		the list of HH members.	
	PPI question 3, 6 and	For 3 respondents (A5, A13, E3) the score entered	After cross-checking with answers in other
	10	for one of the PPI question wasn't correct (doesn't	sections of the questionnaire, replaced with a
		exist in the actual PPI scores table)	score that made sense (the problem was probably
			just a wrong typing of the answer
Part 4.1	Size of plots	Two respondents (E2, E3) had incoherent data: 150	Assumed 150ha was in fact 1.5 ha.
		ha plots	
		Missing data	Wrote 999
	Total number of plots	One respondent (B1) gave information on 3 plots	Changed to a total number of plots of "3".
		but total number of plots reported as "2"	
Part 5.1	Harvested quantities	HH ID number 1 reported a much too high amount	Data replaced by 999.
		of sweet-potato harvested: 4.8 T for a 1 ha plot.	
		Data presented using different units: number of	Converted all the data into kilograms using the
		sacks, drums, sometimes kilos, etc.	conversion table established for the MTS.
		Some units were missing	Put in 999 (don't know)
		Missing data	Put in 999 (don't know)
		Some mentioned number of sacks but didn't	Assumed its 25kg sacks as this is the most common
		mention the size of the sack	size
		Some mentioned that the size of sack was 35 kilos,	Assumed its 30 kg sacks
		which doesn't exist.	
	Codes of respondents	The codes of the respondent for the spreadsheet on	Cross-checked data and corrected codes:
		this section was not matching the initial code given	respondents B3 to B11 became B2 to B10
		to each respondent (for 9 cases)	
Part 5.2	Questions "Is this the	Problem 1: Answered "Yes, same for all crops" but	Problem 1: deleted the details per drop
	same for all crops" and	then details for each crop.	Problem 2: wrote 999 in the details per crop.
	follow-up details	Problem 2: Answered "No, different depending on	
		the crop" but then didn't give any details on each	
		crop.	

Section	Specific question/part	Problem	Action taken
	Question on who select seeds	For 6 cases (A 7, A8, A9 D1, D2, D3), wrong data entry: data entered in the wrong columns	Copy-paste to the correct column
Part 6.1	Variety grown	One respondent (E3) said grow Sele but then didn't give any detail on production of Sele and in Part 7 said DOESN'T grow Sele (but he knows the variety).	Assumed that person doesn't grow Sele so deleted the entry "Sele" in the list of SoL varieties grown.
Part 6.2	Maize storage	For many cases, enumerators filled both columns about storing maize seed and food separately and together. So it wasn't clear if seed and food was stored separately or together.	Made assumptions for each case according to what made the most sense: Example1: if filled "1" and "4" in the column about storing together and then filled "1" for food and "4" for maize, kept only the second part of the data (seeds and food are stored separately) Example2: If filled "2" in ALL columns (for storing together and separately" kept only the first part of the data (seeds and food stored together).
	Code of respondents	One respondent had the code "D13" which doesn't exist.	After cross checking information, changed D13 to F5
Part 7	All questions: coherence between answers	Even when respondents said they didn't know the variety, they were asked if they grew it or if they would like to grow it. Even when respondents said they grew the variety, they were asked if they would be interested to grow it.	Deleted follow-up data if respondents said they don't know the variety. Deleted follow-up data when respondents said they already grew the variety
Part 8.1	Data on food sufficiency	For 8 cases (A5 and A15), data was incomplete regarding which months the HH had experienced hunger.	Checked in paper forms: errors of data entry were corrected (forgot to tick 7 months in total).
		For 2 cases (A2, B2, G1 to 5 and H1), was written that the HH encountered "hungry months" but no detail on which months these were.	Checked in paper forms: actually these 8 persons had answered "no" to the question on "hungry months" so changed "yes" to "no".
Part 8.2	Coping strategies	Data missing for 15 respondents	Checked paper questionnaire: filled in missing data for 6 cases (other 9 cases were indeed empty).

Section	Specific	Problem	Action taken
	question/part		
Part 8.4	Quantity of rice purchased	Unclear unit for quantity of rice purchased	Made the most logical assumptions. Here are a few examples: 2(25) = 50 kg in total 1(5kg) = kg in total
	Reasons for buying rice even though grow rice	Gave reasons even though they are not rice producers (37 cases)	Removed reasons from 37 respondents who actually DON'T produce rice.
Part 9	All questions of part 9	A lot of data was missing	After cross-checking with the paper versions, more data was entered.
	All questions of Part 9	For 2 respondents (E2, E3): wrong data entry	Deleted and replace by 999
All questions which had calendars	All questions which had calendars	Additional information for some respondents regarding 2 months that were actually not listed on the paper questionnaire	Deleted all this extra data that wasn't collected.

Checking consistency in the answers given at different stage of the questionnaire regarding the crops that the HH grows:

There are 7 places where the respondents can give information on the crops that his HH grows:

- <u>4a: List of plots cultivated with crops/plot</u>
- <u>5a: List of crops grown per variety</u>
- 5b: men and women role in agricultural decision with only sometimes additional detail on some of the crops they grow
- 6a: Detail on SoL varieties IF grown
- <u>6b: maize storage</u>
- 7: Familiarity with SoL varieties and mention if grown
- <u>8: Consumption of foodcrops grown</u>

Сгор	Respondents	All of these appear as growing that grow	All of these appear as not growing that crop	Some of these appear as growing that crop	Conclusion	Action
Maize	D1, D8 D11	5a, 8a, 6b	4a	5b, 6a, 7	They grow maize but forgot to mention it in the list of plots	Report this conclusion in the text of the report (but not changed data)
Rice	B2, B5, E1	7	4a, 5a, 8a		Probably NOT GROWING Nakroma	Report this conclusion in the text of the report (but not changed data)
Rice	D6	5a, 8a	4a		Grows rice but forgot to mention it on the list of plots	Report this conclusion in the text of the report (but not changed data)
Rice	G2	4a	5a, 8a, 7		Has a rice field indeed but didn't produce rice in the last 12 months so not mentioned in following questions except in section on rice consumption	Report this conclusion in the report
Peanut	F4, F5, H5	7	4a, 5a, 8a		Probably NOT GROWING Utamua	Report this conclusion in the text of the report (but not changed data)
Peanut	B3, D7	5a, 8a	4a		They grow peanut but forgot to mention it in the list of plots	Report this conclusion in the text of the report (but not changed data)
Peanut	С1, Н6	4a, 5a	8a		They grow peanut but forgot to mention when eat	Put 999 in data on peanut consumption
Peanut	A1, A7, A12, D5	4a	5a, 8a		Probably grow peanut but forgot to mention variety and when consume	Report this conclusion in the text of the report (but not changed data)
Cassava	D1, D8	5a	4a	8a	Grow cassava but forgot to mention on which plot	Report this conclusion in the text of the report (but not changed data)
Cassava	A4, E3, G1	4a		5a, 8a	Grow cassava but forgot to mention it in varieties grown and in consumption	Put 999 in data in cassava varieties and cassava consumption
Sweet- potato	A4, B1, B4	4a	8a	5a	Grow SP but forgot to mention WHEN consume and for some forgot to mention variety	Put 999 in the data

The following table reports what were the inconsistencies identified and what action was taken in each case:

Crop	Respondents	All of these appear as growing that grow	All of these appear as not growing that crop	Some of these appear as growing that crop	Conclusion	Action
Sweet- potato	B3, C2	5a, 8a	4a		Grow SP but forgot to mention on which plot	Report this conclusion in the text of the report (but not changed data)
Sweet- potato	D1	5b	4a, 5a, 8a		Grow SP but forgot to mention on which plot, which variety and when consume	Put 999 for consumption and variety and report this conclusion in the text of the report (for 4a).

Cleaning of the second data set (second round of interviews)

Section	Specific question/part	Problem	Action taken
HH numbers		Problem with 5 respondents (nb 59, 60, 61, 63, 64): no complete data on HH members: whether they are still HH members or not and whether they are going to school or not.	Assume that if enter updated information on the HH members' involvement in agriculture, the HH member is still part of the HH
		Problem with name of the HH of number 66 which is similar to HH nb 50 of DC1	After checking paper forms: changed HH nb 66 to be nb 50
		Problem with HH nb 65 which is reported as being the same HH as nb 42 of DC1 (but number 42 of DC1 is clearly the same HH as number 42 in DC2)	After cross-checking information, it was decided to take out data from the HH nb 65 from DC2.
Household Economic Information	Construction material of walls	In 9 cases, house walls were said to be made out of 2 materials and no indication was given on which was the main material (as it is required to calculate the PPI)	After cross-checking with the data from DC1, one of the 2 materials was assumed to be the major construction material (same material as in DC1).
	House size	Incoherent data for the total house size of one respondent	Data replaced by 999.
Section on crops grown,	Issues related to coherence among	1 person said sell cucumber but not mentioned in the first question with list of crops grown	Added cucumber list of grown crops for 1 person
crops sold,answers given in thesecrops per plot3 sections	3 persons said grow taro on 1 specific plot but not mentioned in the first question with list of grown crops	Added taro in list of grown crops for 3 persons	
		4 persons said grow pigeon pea on 1 specific plot but not mentioned in the first question with list of grown crops	Added pigeon pea in list of grown crops for 4 persons
		1 person said grow cassava on 1 specific plot but not mentioned in the first question with list of grown crops	Added cassava in list of grown crops for 2 persons

Section	Specific question/part	Problem	Action taken
		Another person said sell cassava but not mentioned in the first question with list of crops grown	
		3 people said grow peanut on 1 specific plot but not mentioned in the first question with list of grown crops	Added peanut in list of grown crops for 3 persons
		4 people said grow rice on 1 specific plot but not mentioned in the first question with list of grown crops	Added rice in list of grown crops for 4 persons
		1 person said grow maize on 1 specific plot but not mentioned in the first question with list of grown crops	Added maize in list of grown crops for 1 person
		2 persons grow maize but not mentioned in list of plots	Mention in the text of the report that 2 persons forgot to mention on which plot grow maize
		2 persons grow rice but not mentioned in list of plots	Mention in the text of the report that 2 persons forgot to mention on which plot grow rice
		3 persons grow peanut but not mentioned in list of plots	Mention in the text of the report that 3 persons forgot to mention on which plot grow peanut
		2 persons grow cassava but not mentioned in list of plots	Mention in the text of the report that 2 persons forgot to mention on which plot grow cassava
		4 persons grow SP but not mentioned in list of plots	Mention in the text of the report that 4 persons forgot to mention on which plot grow SP
		1 person grows pigeon pea but not mentioned in list of plots	Mention in the text of the report that 1 person forgot to mention on which plot grow pigeon pea
		1 person grows taro but not mentioned in list of plots	Mention in the text of the report that 1 person forgot to mention on which plot grow taro
CROPS by gender	"For each crop, who is mostly involved in growing it?"	In 20 cases, respondents grew some crops but no data on gender entered.	Entered 999 for these 20 cases

Section	Specific question/part	Problem	Action taken			
Land parcels and their use	How many plots does the HH cultivates?	In 2 cases (nb 12 and 28) the data on total number of plots owned was wrong	After cross-checking, corrected the data (500 replaced by 2, and 2 replaced by 3)			
	Measurement unit of plots	In 4 cases (2 for nb 10, 20 and 28), wrong unit entered.	Changed sq. Meters to ha.			
		In 2 cases (6 and 15), missing unit.	Added the unit: ha			
	Overall information on plots	When compared to the total number of plots reported, it appears that data on 18 plots are missing.	Mentioned in the report that data is missing for 18 plots.			
Seed and planting	Months of harvest	Enumerator mixed up question on harvest months and months of consumption (1 case)	Deleted the data on harvest months			
material use in the last growing	Amount of maize seeds used: conversion to Nb of kilos Note: used the conversion table but the following units were not found in the conversion table or weren't clear.	Respondents reporting quantities of seeds with units such as jerrycans, <i>bote, lata mina rai</i> (15 cases)	These units were converted to kilos assuming they were similar to 5L or 12L paint drums.			
season and amount		Unit is "sack" but no information on the size of the sack (4 cases)	Assumed they are 25 kg sacks.			
narvested		Unit is "plastic" (4 cases)	Assumed there is about 2.5kg of seeds per sack after cross-checking with other data.			
		2 cases where the unit is SGM can but no indication of the size	Assume its 500g SGM can			
		9 persons reported amounts of maize seeds used with unknown units (<i>talin, balde, lafatik,</i> etc.)	Data replaced by 999.			
	Amount of maize harvested	In 14 cases, the unit was "drum" but no indication on the size of the drum.	Assumed it's the standard 200L drum			
	Note: used the conversion table but the following units were not found in the conversion table or weren't clear.	In 5 cases, the unit wasn't clear (for example the number of sacks of cobs – not pilled)	Replaced data by 999			
		In 2 cases, the unit was "sack" but no indication on the size of the sack.	In 1 case assumed its 25kg sacks, in the other case assumed its 50kg sacs (because <i>sak</i> "NCBA").			
		1 case with unclear unit	Replaced by 999			

Section	Specific question/part	Problem	Action taken			
	Amount of rice seeds used: conversion to Nb of kilos Note: used the conversion table but the following units were not found in the conversion table or weren't clear.	1 case with a total quantity of "50 sacks of 25 kilos"	As this is impossible, it was assumed that "50" was not the number of sacks but the number of kilos.			
		1 case with "kaleng mina rai" as unit	Assumed it is similar to a 5L paint drum			
		1 case with <i>bote</i> as unit but no indication on the size of the " <i>bote</i> "	Assumed it is 4kg per <i>bote</i>			
	Amount of rice harvested	3 cases where the unit is "sack" but no indication on the size of the sack.	Assumed its 25kg sack.			
		In 6 cases, it is unclear if the amount entered is already converted into kilos or not.	Mentioned in the report that incoherent data might be because of this.			
	Amount of peanut seeds used and peanut harvested: conversion to Nb of kilos Note: used the conversion table but the following units were not found in the conversion table or weren't clear.	3 cases with unclear unit for seeds	Replaced by 999			
		3 cases with unit "SGM can" for seeds but no indication of the size of the can	Assume its 500g cans			
		1 case with unit "bottle" for seeds	Assume its 1kg is seeds per bottle			
		1 case with unit "plastic bag" for seeds	Assume its 2.5kg of seeds per bag			
		1 case with "lata mina rai" for harvest	Assume it's like 5L paint drums			
	Amount of cassava harvested	1 case with just "karong NCBA" as unit	Assume 1 karong NCBA is equivalent to a 50kg sacks of rice			
	Amount of SP harvested	10 cases with just "karong" as unit but no indication of the size.	Assume its 25 kilos sacs (the most common)			
		1 case with just "karong NCBA" as unit	Assume 1 karong NCBA is equivalent to a 50kg sacks of rice			

Section	Specific question/part	Problem	Action taken		
Rice buying	Quantity of rice bought PER MONTH – converting to kilos	In 11 cases, no unit or unclear unit	In 11 cases, made assumptions after cross- checking with answers of the next question (quantity bought per YEAR)		
	Quantity of rice bought PER YEAR – converting to kilos	In 8 cases, no unit or unclear unit	In 8 cases, made assumptions after cross-checking with answers of the previous question (quantity bought per MONTH)		
Maize buying	Quantity of maize bought PER MONTH – converting to kilos	In 5 cases, no units of unclear unit	In 5 cases, assumed its 25 kg sacs after cross checking with answers of the next question.		
	Quantity of maize bought PER YEAR –	3 cases with unclear unit (no similar conversion known)	Replaced by 999		
	converting to kilos	3 cases with "sack" as unit but no indication on the size of the sack	Assumed its 25 kg sacs		
CSI	Coping strategies applied in the last month	No weight available for the coping strategy: sell harvest before harvest	Data from this strategy was not analysed (moreover, it doesn't make a big difference because this was only asked in DC2)		
Sharing in CSPG results and their use	Quantity of seeds shared by respondent with others	1 case (respondent 44), impossible data: shared 400 kilos with other	Changed to 999.		
List of HoH names and new HH	List of new HH	Confusion regarding name of HoH of number 42	Removed respondent number 42 from the list of NEW HH: it is in fact the same HH as number 42 of DC1		
	List of HH members of new HH	HH number 33, 57, 58 and 42 were actually not new HH	Updated information on the table were was supposed to be entered the updated data on HH members that were already interviewed in the past.		
HH composition	List of HH members of new HHs	2 cases (number 33 and 42): total number of HH members reported different from number of HH members listed (lack 1).	Added 1 HH member (the HoH) into the list of HH members so that the total number of HH members listed is correct.		

Section	Specific question/part	Problem	Action taken			
		1 case (number 58): total number of HH members reported different from number of HH members listed (lack 1).	Added 1 HH member (the HoH) into the list of HH members – but still lack info on 1 member.			
	Information on school situation of HH members	Lack information on school situation for 10 persons from 8-17 years old	Added 999.			
	Gender of HH members	Lack of gender information for 1 HH member (number 33).	Added gender of this HH member (known from person's name)			

APPENDIX II – Determining weights of coping strategies

To calculate the CSI (Coping Strategies Index), a number of coping strategies and their weights have to be selected according to the local context where the survey is conducted. In total, 26 coping strategies were found to be relevant to the Timor-Leste context. For each of these strategies, respondents are asked how often they had to apply it in the past week for example. These answers are then converted into "frequency scores" as follows:

- If the strategy is never applied, the frequency score will be: 0
- If the strategy is applied only a few times per week (1-2 times or less) the frequency score will be: 1,5
- If the strategy is applied 3-6 times per week, the frequency score will be: 4,5
- If the strategy is applied seven days a week, the frequency score will be: 7

For other coping strategies which are most probably not conducted each week but once every few weeks only (such as selling cattle or agricultural tools), respondents were asked if they had to apply it or not in the last month (without having to give a frequency). In such cases, it was estimated that the "frequency scores" would be:

- 0,5 if the strategy was applied in the last month
- 0 if the strategy wasn't applied in the last month

Then, the different strategies are differentiated from each other by defining a weight according to the "severity" of this strategy in the local context. The "severity weights" range from 1 to 4: 1 for "not severe", 2 for "moderate", 3 for "severe" and 4 for "very severe".

In order to determine these weights, five "reference" persons with a good understanding of the Timor-Leste rural situation and working within the Seeds of Life program since several years were consulted. Each of them gave a "severity weight" to each of the following coping strategies and provided extra information whenever possible.

This data was then compiled and used to determine a "final weight" that would then be used to calculate the CSI of respondents of this survey. The following guidelines were used to select the final weights based on the information provided by the five reference persons:

- Whenever four out five reference persons gave the same weight, this weight was selected as the final weight (eight coping strategies)
- Whenever three out five reference persons gave the same weight, this weight was selected as the final weight (eight coping strategies)
- In all the other cases (ten), considerations on what is the average weight, how many respondents indeed applied the strategy and how other similar strategies

were weighted were used to determine the final weight. For each of these ten strategies, explanations on how the final weight was selected are given in the last column.

The summary of these steps is presented in Table 44 of the following page.

Calculation of the "reduced CSI"

The reduced CSI includes only five coping strategies widely spread across the world and has been developed to enable comparison of food security across different countries. It is calculated using a universal set of severity weightings for each of the five behaviours).

Copping strategy	Universal weight
Eat less preferred or less expensive foods?	1
Limit portion size at mealtimes?	1
Restrict consumption by adults in order for small children to eat?	3
Reduce number of meals eaten in a day?	1
Borrow food/ Rely on help from a friend or relative	2

Table 43. Coping strategies of the rCSI and corresponding weights

Coping strategy		Ref. 2	Ref. 3	Ref. 4	Ref. 5	Average weight	FINAL WEIGHT	Explanations
1. Eat less preferred or less expensive foods?	1	1	3	1	1	1,4	1	
2. Limit portion size at mealtimes?	1	1	2	1	1	1,2	1	
3. Reduce number of meals eaten in a day?	1	1	3	1	1	1,4	1	
4. Restrict consumption by adults in order for small children to eat?	4	1	2	1		2	2	"2" is the average weight among available scores and some respondents do apply this strategy (not rare)
5. Feed the working members of the household at the expense of nonworking members?	4	2	1	1	1	1,8	1	
6. Send household members to eat elsewhere?	3	2	2	2	NA	2,25	2	
7. Spend saved money?	2	3	4	2	2	2,6	2	
8. Borrow food?	2	3	3	1	2	2,2	3	Selected "3" because some respondents indeed use this strategy but it is still not very common. Also, 3 is not too far from the average weight.
9. Borrow money to buy food?	1	3	4	1	2	2,2	2	Selected "2" because it's a quite common practice and "2" is close to the average.
10. Purchase food on credit?	4	2	3	2	NA	2,75	4	Selected 4 because in reality, nearly no one uses this strategy
11. Harvest and eat immature crops?	1	2	2	2	2	1,8	2	
12. Consume seed stock held for next season?	4	4	4	4	4	4	4	

Table 44. Selection of final weights for each coping strategy

Coping strategy		Ref. 2	Ref. 3	Ref. 4	Ref. 5	Average weight	FINAL WEIGHT	Explanations
13. Sell chickens, ducks, etc.?		2	4	3		2,75	3	Selected 3 because quite a lot of people do this and 3 is the closest to the average.
14. Sell pigs?	2	2	3	3		2,5	3	Selected 3 because it is quite the same situation as for chickens, and it's also not far from the average.
15. Sell goats or sheep?	2	2	3	2		2,25	2	
16. Sell cattle?	2	3	2	2		2,25	2	
17. Sell agricultural tools?	2	4	1	3	3	2,6	4	Selected 4 because in reality, nearly NO ONE does this.
18. Rely on help from a friend or relative?	2	3	2	2	2	2,2	2	
19. Gather wild food?	1	3	4	2	1	2,2	2	Selected 2 because it's a quite common practice and 2 is close to the average.
20. Go hunting?	2	2	2	4	1	2,2	2	
21. Worked for food only?	4	3	4	3		3,5	4	Selected 4 because in reality, nearly NO ONE does this
22. Skip entire days without eating.	4	4	4	4	4	4	4	
23. Sent children to live with relatives.	4	3	2	4		3,25	4	Selected 4 because in reality, nearly NO ONE does this
24. Sold or bartered household items to buy food.	3	3	2	3		2,75	3	
25. Rented out land.	3	4	2	3	3	3	3	
26. Sold land.	4	4	4	4	4	4	4	