

The Democratic Republic of Timor-Leste Ministry of Agriculture and Fisheries

Seeds of Life Fini ba Moris



# Mid-Term Survey 2013



# Seeds of Life 3 Mid-Term Survey

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

Dili, November 2013



This report summarizes the findings of the 2013 Seeds of Life Mid-Term Survey carried out by the Ministry of Agriculture and Fisheries/ Seeds of Life program, with the assistance of an External Consultant recruited by Seeds of Life.

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 plus the Australian Centre for International Agricultural Research (ACIAR) and is managed by ACIAR. The Centre for Legumes in Mediterranean Agriculture (CLIMA) within The University of Western Australia (UWA) coordinates the Australian funded activities.

# Foreword

The Ministry of Agriculture and Fisheries of Timor-Leste through the Seeds of Life program is helping to fill an important gap in national food production and supply by increasing farming family access to quality planting materials of the major food crops they commonly cultivate.

The objective of the Seeds of Life (SoL) program is to *improve food security through increasing the productivity of staple crops* (maize, rice, peanut, sweet potato and cassava). The 11 varieties of these crops already released by the Government under the MAF-SoL program have proven to be 25-130% higher-yielding than local varieties of the same crops grown under normal farmers' practice. The objective of SoL's 3<sup>rd</sup> phase is to *establish as sustainable national seed system* that ensures farming families can always access quality planting materials of these improved varieties.

The National Seed System for Released Varieties (NSSRV) is already the primary source of locally produced higher yielding food crop seed and cuttings. Its two complementary approaches: (i) production of *certified seed* and *commercial seed* through contract growers and commercial seed producers and (ii) production of *community seed* by community seed production groups, are not only increasing farm family access to good quality seed but also increasing seed security and sovereignty at district and national level by reducing MAF dependency on annual importations of rice and maize seed.

SoL3 has now run for two and a half years and has initiated significant changes among rural households and their food crop production. This Mid-Term Survey (MTS) helps to quantify the program's progress since 2011 and better understand the successes and limitations encountered. The MTS also provides guidance on how SoL best establish a sustainable National Seed System for Released Varieties during its remaining years.

The challenge now facing the Seeds of Life program, the Ministry of Agriculture and Fisheries and its other Development Partners is to use this information to benefit the farming families of Timor-Leste whose *food security begins with seed security*.

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# Abbreviations and Acronyms

ACIAR	Australian Centre for International Agriculture Research
CSPG	Community Seed Production Group
НН	Household
MAF	Ministry of Agriculture and Fisheries
MTS	Mid-Term Survey
INGO	International Non Governmental Organization
OFDT	On-Farm Demonstration Trial
SEO	Suco Extension Officer
SoL	Seeds of Life

# **Executive Summary**

In October 2011, SoL3 implemented a Baseline Survey (1800 households in 100 sucos of 13 districts) in order to collect benchmark data to measure progress for the programs' key indicators over time.

This Mid-Term Survey measures the progress over the first two years of SoL3, and more specifically in terms of adoption of MAF/SoL released varieties.

Overall, findings of this survey show that MAF/SoL varieties are very much valued by adopters and non-adopters, and that the main barrier to increased adoption is access to seeds/cuttings. Therefore, the rollout of MAF/SoL varieties through Community Seed Production Groups is critical to reach adoption of one or more improved varieties by 50% of the crop producing households in Timor-Leste by the end of SoL3.

	]	Baseline survey	MTS
Adoption of one or more MAF/SoL va National	Adoption of one or more MAF/SoL varieties: National		25%
Reg	ional: West	12%	18%
	Centre	20%	26%
	East	31%1	32%
Program related:	Districts of early SoL2 <sup>2</sup>	30%	36%
	Other districts	11%	20%
Adoption per varie	ety: Sele	13%	15%
	Noi-Mutin	-	2%
	Nakroma	11%	15%
	Utamua	16%	11%
	Hohrae	7%	7%
	Ai-luka	3%	3%

# Increase in adoption of MAF/SoL varieties

The main factors that were found to influence adoption were, in order of importance:

- ✓ Respondent knowing about the existence of a seed production group in his/her village,
- ✓ Respondent receiving seeds from a Suco Extension Officer (SEO),
- $\checkmark$  Respondent or another family member being a member of a seed production group,
- ✓ Respondent knowing who the SEO is.

<sup>&</sup>lt;sup>1</sup> Excluding Viqueque and Lautem

<sup>&</sup>lt;sup>2</sup> Liquica, Aileu, Baucau and Manufahi

# **Details about adopters**

	Main sources of seeds/cuttings	Average area grown per adopter	Proportion of crop area grown/adopter	Average harvest per adopter <sup>3</sup>
Sele	52% government, 15% NGOs	0.5 ha	85%	382 kg
Noi-Mutin	44% government, 14% NGOs	0.8 ha	95%	328 kg
Nakroma	61% government, 18% NGOs	0.8 ha	43%	779 kg
Utamua	41% government, 32% own seeds	0.3 ha	94%	29 kg
Hohrae	60% government, 13% relatives	0.6 ha	86%	180 kg
Ai-luka	59% government, 22% relatives	0.3 ha	86%	266 kg

# Very positive perception of increased productivity

Overall, 88.3% of adopters perceived an increase in productivity of the MAF/SoL varieties they were growing compared to other varieties they are used to grow. This percentage is very similar to the baseline data (87.5%). On average farmers estimated a 57% yield increase compared to other varieties. The varieties with the highest yield increase perceptions were in order of importance: Hohrae, Sele, Noi-Mutin and Ai-luka. The perception of increased yields for Nakroma and Utamua was not as important as for the previously mentioned varieties.

As a result, more than 90% of adopters are planning to plant again the MAF/SoL varieties they are currently growing during the coming cropping season. And about 37% of adopters plan to increase the area of the MAF/SoL variety in the coming year.

# Period of food-shortage

62% of farmers experience one month or more of food shortage - food-shortage being defined as the unavailability of self-grown food crops for consumption. Overall, the length of this food-shortage period is 2.7 months (mainly from December to February). However, during this period of food shortage, a very large majority of farmers buy rice and adopt different coping strategies. When deducting from the months of food-shortage, the months when farmers buy rice, this period of "food-shortage" goes down to 0.2 months.

# Familiarity with MAF/SoL varieties

Overall, 53% of respondents are familiar with one or more MAF/SoL varieties. In the baseline, only 11% of respondents declared they knew about the SoL Program. The most well-known varieties are Sele and Nakroma. The main sources of information of farmers regarding these varieties are first MAF (more than 50% of cases) and second media (TV and radio).

<sup>&</sup>lt;sup>3</sup> Average harvests here were calculated only among farmers for who harvest data was available: 81 farmers for Sele, 12 for Noi-Mutin, 21 for Nakroma, 18 for Utamua, 4 for Ai-Luka and 8 for Hohrae. If converted to yields, these averages appear to be far under MAF/SoL varieties average yielding potential. This is mainly because farmers plant in mixed inter-cropping and because production data reported by respondents might not be accurate.

# Groups and agricultural extension

30% of farmers interviewed are members of farmer groups which is much more than in the baseline (13%). Also, 14% of respondents reported being members of seed production groups (part of which are not SoL-supported CSPGs).

Also, 25% of farmers interviewed declared they knew about the existence of a seed production group in their village, about half of these farmers were most probably mentioning groups facilitated by INGOs such as Care, HIVOS or Mercy Corps.

Extension workers are known by 61% of respondents, much more than in the baseline survey (43%). Also, many more services seem to have been delivered to farmers in the last 12 months compared to 2011: 61% of farmers who knew the SEO received seeds and 48% received trainings. Overall, 65% of respondents who knew the SEO rated his services to be good or very good.

# Rezumu Ezekutivu

Iha Outubru 2011 nia laran, SoL3 implementa ona Levantamentu Baze de Dadus/*Baseline Survey* ba(uma kain 1800 iha suco 100 husi distritu 13 nia laran) para atu rekolla dadus de referénsia/*benchmark data* hodi bele sukat progressu programa nian ne'ebe sai hanesan indikadór importante husi tempu ba tempu.

Levantamentu Térmu-Médiu (*Mid-Term Survey*) ne'e sukat progresu ne'ebé atinji husi programa SoL3 iha tinan rua primeiru husi programa SoL3, no espesifikamente kona-ba adosaun MAP/SoL nian varidade ne'ebé lansa tiha ona.

Jeralmente, rezultadu husi levantamentu/survey ida ne'e hatudu katak varidade MAP/SoL kuaze hetan valór diak liu husi adoptadór sira no mos husi sira ne'ebé la'os adaptadór. Bareira prinsipál atu hasa'e adosaun ne'ebé aas mák asesu ba fini musan/kain. Tanba ne'e, distribuisaun MAP/SoL nia varidade liu husi Grupu Komunidade Habarak Fini (GKHF) sai hanesan maneira ne'ebé importante tebes atu atinji adosaun ba varidade kualidade diak ida ou liu husi 50% uma kain ne'ebé produs ai-horis iha Timor-Leste antes programa SoL3 remata.

		Ba	seline survey	MTS
Adosaun ba varidade MAP/Se	oL ida ka liu:	Nasional	18%	25%
	Rejionál:	Oeste	12%	18%
		Sentru	20%	26%
		Leste	31%4	32%
Relasaun ho Programa:	Distritu dahuluk	husi programa SoL2 <sup>5</sup>	30%	36%
	Dis	stritu sira seluk	11%	20%
Adosaun kad	a varidade:	Sele	13%	15%
		Noi-Mutin	-	2%
		Nakroma	11%	15%
		Utamua	16%	11%
		Hohrae	7%	7%
		Ai-luka	3%	3%

# Aumentu iha adosaun ba varidade MAP/SoL nian

Identifika ona fatór prinsipál hirak ne'ebé influénsia nível adosaun, tanba ne'e mak importante tebes atu:

- ✓ Respondente hatene kona-ba exizténsia grupu produsaun fini iha sira nia suco laran,
- ✓ Respondente hetan fini husi Estensionista,
- ✓ Respondente ou membru familia seluk iha umakain involve mos iha grupu habarak fini,
- ✓ Respondente hatene se mak Estensionista.

<sup>4</sup>La inklui ba Viqueque ho Lautem

<sup>&</sup>lt;sup>5</sup>Liquiça, Aileu, Baucau no Manufahi

# Detallu kona-ba adaptadór sira

	Fonte prinsipál fini musan/kain	Médiu área kuda /adaptadór	% área kuda ai- horis/adoptadór	Médiu koilleta /adaptadór <sup>6</sup>
Sele	52% governu, 15% ONG sira	0.5 ha	85%	382 kg
Noi-Mutin	44% governu, 14% ONG sira	0.8 ha	95%	328 kg
Nakroma	61% governu, 18% ONG sira	0.8 ha	43%	779 kg
Utamua	41% governo, 32% fini rasik	0.3 ha	94%	29 kg
Hohrae	60% governo, 13% relativas	0.6 ha	86%	180 kg
Ai-luka	59% governo, 22% relativas	0.3 ha	86%	267 kg

## Presepsaun ne'ebé positivu tebes kona-ba hasa'e produtividade

Jeralmente, 88.3% husi adoptadór sira hateten katak produtividade aas liu mák varidade MAP/SoL nian ne'ebé sira kuda wainhira kompara ho varidade seluk ne'ebé baibain sira kuda. Persentajen ida ne'e hanesan ho dadus husi levantamentu baze de dadus/baseline survey (87.5%). Tuir média agrikultór sira halo estimasaun katak rezultadu produsaun aumenta 57% wainhira kompara ho varidade sira seluk. Varidade sira ne'ebé ho rezultadu produsaun aumenta makaas mak hanesan: Hohrae, Sele, Noi-Mutin ho Ai-Luka. Presepsaun kona-ba rezultadu produsaun ne'ebé aumenta husi Nakroma la hanesan ho varidade hirak ne'ebé mensiona iha leten.

Impaktu husi ne'e, liu husi 90% adoptadór sira planéia atu kuda fila fali varidade MAP/SoL ne'ebé agora daudaun sira kuda iha epoka oin mai. No maizumenus iha adoptadór 37% mak planéia atu haluan área kuda ba varidade MAP/SoL iha tinan oin mai.

### Periódu Menus Ai-han

Iha agrikultór 62% mak hetan esperiénsia kona-ba menus ai-han iha fulan ida nia laran kou liu, menus ai-han ne'e signifika katak laiha ai-han ne'ebé sira kuda rasik ba konsumu nian. Jeralmente, periódu naruk kona-ba menus ai-han ne'e mák fulan 2.7 (liu-liu husi fulan Dezembru to'o Fevereiru).

Maski nune'e, durante periódu menus ai-han ne'e, maioria agrikultór sosa foos no adopta estratéjia buka ai-han ne'ebé diferente. Wainhira hamenus husi fulan menus ai-han, ho fulan ne'ebé agrikultor sira sosa foos, maka periódu "menus ai-han" ne'e tun fali ba fulan 2.0.

<sup>&</sup>lt;sup>6</sup>Média ba koileta iha ne'e kalkula de'it ba agrikultór ne'ebé iha dadus koileta: agrikultór 81 Sele, 12 Noi Mutin, 21 Nakroma, 18 Utamua, 4 Ai-luka no 8 ba Hohrae. Karik konverte ba rezultadu produsaun, maka média ne'e ki'ik liu husi varidade MAP/SoL nia média rezultadu produsaun potensiál. Ida ne'e prinsipalmente mosu tanba agrikultór sira kuda ai-horis kahur malu no tanba dadus produsaun ne'ebé relata husi respondente sira la loos.

# Familiaridade ho MAP/SoL nia varidade

Jeralmente, iha respondente 53% mak kuaze familiar/koñese diak ho MAP/SoL nia varidade oin ida ou liu. Tuir rezultadu husi baze de dadus/*baseline* haktuir katak iha respondente 11% de'it mak hatene kona-ba programa SoL.

Varidade ne'ebé sira koñese diak liu mak Sele ho Nakroma. Fonte prinsipál ba informasaun ne'ebé agrikultór sira hetan kona-ba varidade hirak ne'e mak primeiru husi MAP (iha kazu liu husi 50%) no segundu mak husi media (TV ou radio).

### Grupu sira no estensaun agríkula

30% husi agrikultór sira ne'ebé hetan entrevista sai hanesan membru husi grupu, ne'ebé kuaze barak liu tiha baze de dadus*/baseline* (13%). Nune'e mos iha respondente 14% mak haktuir katak sira mos involve iha grupu habarak fini (la'os parte husi GKHF ne'ebé apóia husi SoL).

Nune'e mos, 25% husi agrikultór sira ne'ebé hetan entervista deklara katak sira hatene kona-ba existénsia husi grupu habarak fini iha sira-nia suco laran, no maizumenus metade husi agrikultór sira ne'e mensiona kona-ba grupu sira ne'ebé hetan apóiu husi ONG internasionál sira hanesan CARE, HIVOS ou Mercy Corps.

Iha respondente 61% mak hatene ou koñese estensionista sira, kuaze liu tiha levantamentu baze de dadus/*baseline survey* (43%). Nune'e mos, kuaze atendimentu barak liu ona mak halo ba agrikultór sira iha fulan 12 ikus wainhira kompara ho iha tinan 2011: 61% husi agrikultór sira ne'ebé hatene ou koñese estensionista kuaze simu hotu fini no 48% husi sira hetan treinamentu. Jeralmente, 65% husi respondente sira ne'ebé hatene ou koñese estensionista fó mos sira-nia avaliasaun ne'ebé diak ou diak liu ba entesionista sira-nia serbisu.

### 1.1 Background

The Seeds of Life (SoL) program is an agriculture development program of the Timor-Leste Ministry of Agriculture and Fisheries (MAF), supported by the Australian Government through the Australian Centre for International Agricultural Research (ACIAR) and Australian Aid. The goal of the SoL program is to improve food security through increased productivity of major food crops, such as: maize, rice, peanut, sweet potato and cassava. The focus of the program is to improve, throughout the country, the availability of seeds and cuttings of improved varieties with higher yield potentials compared to the local varieties of these crops.

In June-July 2013, a mid-term survey has been conducted to gather relevant data for assessing progress for key program indicators since the start of SoL Phase 3 (2011). More importantly, the purpose of the mid-term survey (MTS) is to assess the extent to which farmers have adopted MAF released varieties developed through the MAF/SoL program. This survey is a follow-up survey to the baseline survey conducted in October 2011. In order for data to be comparable, the methodology of this MTS is consistent with the methodology of the baseline survey, in terms of sampling methodology, target population surveyed, questions asked and data analysis.

### 1.2 Sampling methodology

In order to have quality data, the total sample size was calculated based on a 5% margin of error and a 99% confidence level, providing a total of 661 households to be interviewed. This sample size has been calculated using the statistics program Raosoft and was based on the 2010 Population and Housing Census estimation of the number of rural households (750,323 people, in 136,929 households).

The following sampling approach was based on the approach taken for the baseline survey:

• Step 1: distributing the 661 households to be interviewed per district. This was done proportionally to the total number of rural households per district.



www.raosoft.com

• Step 2: correcting the district sample size. Samples in districts with less than 30 households have been revised to have a minimum of 30 HH (Manatuto and Manufahi).

- Step 3: The district sample sizes were divided by 12 to get the number of sucos to be sampled per district. The number of 12 households interviewed per suco was mainly chosen for logistical reasons: it was estimated that one enumerator could cover six households per day and that two enumerators could cover each one aldeia per suco.
- Step 4: Random selection of sucos. This was done using the internet program: <u>http://www.randomizer.org/form.htm</u>.
- Step 5: Random selection of aldeias (using the same program) was based on two aldeias per suco sampled (see Appendix I for list of sample sucos and aldeias).

The following table shows the planned sample versus actual interviews<sup>7</sup>. In total, the MTS has covered 0.5% of Timorese rural households, 14% of Timorese rural sucos, 6% of Timorese rural aldeias and 60% of all subdistricts. Also, note that among the 55 sampled sucos, 20 are sucos were MAF/SoL has facilitated the forming of CSPGs.

District	Numbers of respondents targeted	Number of respondents interviewed	Final numbers of responders considered	Rural households <sup>8</sup>	Number of sample sub- districts	Number of sample sucos
Ainaro	34	34	34	7,819	2	3
Aileu	38	38	38	6,521	2	3
Baucau	88	89	88	18,148	5	7
Bobonaro	68	82	68	14,162	4	6
Covalima	48	49	49	9,870	3	4
Dili	31	31	31	6,330	2	3
Ermera	88	99	88	18,132	5	7
Liquiça	46	46	46	9,596	3	4
Lautem	45	44	44	9,403	2	4
Manufahi	30	30	30	6,087	2	2
Manatuto	30	31	30	5,689	2	2
Oecusse	59	59	59	12,310	3	5
Viqueque	67	68	67	12,862	5	5
Total	672	700	672	136,929	40	55
	Tota	Total for "rural" in Timor-Leste		136,929	67	400
Percentage				0.5%	60%	14%

Table 1. Sample per district

As shown in the following map, sampled sucos were well spread out over the 13 districts of the country. Note that in Dili district, two sucos were randomly selected on the island of Atauro where farmers still have very limited access to MAF/SoL varieties (MAF/SoL will start to work there in 2013/2014 and SoL is also not aware of any organization working there).

<sup>&</sup>lt;sup>7</sup> For the analysis, 28 interviews were discarded. In Bobonaro and Ermera, interviews were mistakenly conducted in non-sampled sucos, and in some sucos more interviews had been conducted than planned. Less reliable, or incomplete questionaires from those sucos were also eliminated.

<sup>&</sup>lt;sup>8</sup> From 2010 Population and Housing Census of Timor-Leste, Vol. 2



Figure 1. Location of sample sucos and respondents surveyed during the MTS<sup>9</sup>

<sup>&</sup>lt;sup>9</sup> All the maps presented in this report were produced by Samuel Bacon, SoL3's Climate Change Advisor.

In each suco, two aldeias were sampled explaining the concentration of respondents in particular areas of the suco. If looked at at a bigger scale – down to the aldeia level – it also shows that respondents are often concentrated in the same neighborhood rather than well spread out across the aldeia.

## **1.3** Survey instrument

The MTS questionnaire is a shorter version of the baseline survey questionnaire and consists of seven main sections (see Appendix II):

- Household general information
- Land usage
- Food crop production
- Familiarity with MAF/SoL varieties
- Participation in groups
- Food self-sufficiency
- Access to extension services

It took about 30 minutes per household interview.

A guideline for focus groups was also designed to facilitate discussions with local leaders and farmers in order to collect qualitative information about local leaders' perceptions of the access and availability of MAF/SoL seeds and cuttings, as well as their perception of the communities' satisfaction towards these varieties (see Appendix III).

### 1.4 Data Collection

A team of 12 enumerators were selected and trained to conduct the interviews. Enumerators were people with agricultural backgrounds (10 persons among 12) and experience in conducting interviews. The MTS supervisor was in charge of supervising data collection. On average, one district was covered by two to four persons within one week.



Figure 2. Two enumerators practicing how to conduct interviews during a role play session.

Lessons learned from the implementation of the baseline survey were included in the design of the mid-term survey in order to ensure quality data collection.

The following actions were taken:

- One week training including two days of pre-testing and reviewing the questionnaire,
- Field monitoring by the consultant and her assistant,
- Systematic review of questionnaires filled in after each interview by the enumerator,
- Provision of short guiding tools for enumerators to check the consistency of the data given by farmers (for instance, amount of seeds planted related to harvest volumes, etc.),
- Daily reporting to the fieldwork supervisor by enumerators: number of interviews conducted, possible problems, confusions, etc.
- Weekly review of filled-in questionnaires by a data control team and debrief with enumerators before they departure for another week of data collection,
- Final reflection session with enumerators at the end of the fieldwork to debrief on the main problems encountered.
- After the first phase of data collection, some farmers were revisited to verify some incoherent data (about 30% of the sample).
- 10% of respondents had their plots measured using a GPS application in order to cross-check farmer's estimations regarding the area of food crop production.
- Scales were used to weight local measurements of crop production or seed containers (sacs, "bote", cans, etc.) in order to cross-check the data with the conversion table used for converting production data.
- Conducting six focus-group discussions in five districts in order to collect qualitative information about access to seeds, main varieties grown in the suco, etc.

### **1.5 Data Entry, Cleaning and Analysis**

A team of four to six data entry officers were trained in correcting questionnaires, debriefing with enumerators on incoherent results as well as in the use of SPSS for data entry.

Each questionnaire was checked by a data entry officer before data entry for the following:

- ✓ Contradictions among answers of the same questionnaire (consistency)
- ✓ Reasonable/realistic quantitative answers (production, surface, etc.)
- ✓ Completeness of the questionnaire

Double data entry of the questionnaires was conducted for 75% of the interviews in order to ensure better data quality. Due to time limitations, the remaining 25% were entered only once but these single entries were cross checked by a second data entry officer.

Data entry was conducted directly in SPSS. For the main indicators, the same analysis as those performed for the baseline survey were conducted to ensure comparability between the baseline survey and the mid-term survey.

Gender-disaggregated analysis was conducted for key data, comparing results between male-headed households and female-headed households. However, none of the differences between those two groups were found to be statistically significant (such analysis was done using the statistical Chi-Square test). In other words, the data collected in this survey was similar if we looked only at male or female-headed households. Therefore, very few gender-disaggregated data is presented in this report.

### 2.1 Household Demographic Characteristics

As much as possible, enumerators tried to interview the head of household in order to get the most reliable data possible regarding agricultural activities. That was possible for 65% of the interviews. In the remaining cases, the head of household wasn't available and the enumerator interviewed another member of the family.

Table 2 gives some summary characteristics of the surveyed population. The proportion of female and male headed-households is similar to the baseline survey sample, which supports the fact that the sample is representative of the rural population of Timor-Leste. If comparing with the 2010 Census, the proportion of female headed households is slightly lower than nationally: 16% in the census vs. 8% in the sample (however, the census data is national and not only for rural areas).

Characteristic	% among		
Characteristic	respondents		
Number of visited households	672		
<ul> <li>Male-headed households</li> </ul>	92%		
<ul> <li>Female-headed households</li> </ul>	8%		
Male respondents	60%		
Female respondents	40%		
Age of head of household (age categories)			
• < 29	18%		
• 30-39	21%		
• 40-49	23%		
• 50-59	23%		
• 60+	15%		
Number of household members			
• 1-4 members	19%		
• 5-7 members	41%		
• 8-10 members	29%		
• 11 members +	11%		
Head of household marital status			
Married	92%		
Widow	6%		
Divorced	1%		
• Single	1%		
[Only 659 respondents answered questions on age of HoH and			

Table 2. Characteristics of the Surveyed Population

[Only 659 respondents answered questions on age of HoH and 664 for household members]

Also, as reported in the baseline survey, the female-headed households (FHH) were commonly smaller than the male-headed households (MHH); on average FHHs had 6 members whereas MHHs had 7.1 members.

#### 2.2 Crops cultivated and Land Usage

#### 2.2.1 Cultivation of Five Food Crops

#### Variety and combination of food crops

As shown in the following table, the main food crop grown by respondents is maize, followed by cassava and sweet potato. Rice is mainly grown in Bobonaro, Baucau, Viqueque and Manatuto and was grown by about one third of the respondents. The percentages of households growing maize, rice or cassava are comparable with the findings of the baseline survey as well as with the 2010 census, which again confirms the representativeness of the MTS sample.

	Number of	Percentage of respondents cultivating this crop				
	respondents	Maize	Rice	Peanut	Sweet Potato	Cassava
% of farmers	672	95%	37%	29%	60%	86%
2010 CENSUS		88%	39%	NA	NA	81%
Baseline data	1,799	83%	38%	23%	54%	84%

Table 3. Cultivation of Five Food Crops by Survey Sample Households

In terms of irrigation, as expected rice is the main irrigated crop; 66% of farmers interviewed grow irrigated rice (comparable to baseline data)

	Number of rice	Irrigated rice	Non irrigated	Irrigated and non-irrigated
	farmers	only	rice only	rice
MTS	250	66%	33%	1%
Baseline	676	59%	39%	3%

Table 4. Number of Farmers growing Irrigated and Non-Irrigated Rice

[248 rice growers answered questions about irrigation of rice fields]

For other crops, no irrigation was reported; except for one farmer growing maize in suco Raifun, Bobonaro. During the second cropping season (planting in June), farmers of that area plant maize in the dried up rice fields and can use the water from the irrigation canals to water maize. The following figure classifies households according to the combination of food crops they are growing. Each segment in the graph represents a category of household growing either a single crop, or a combination of two, three, four or the five crops (the intersection in the middle of the graph). The side box summarizes the categories for all maize growers.



Legend The information on combination of crops for each of the five crops is represented by two areas in the graph: a full circle, and the segment opposite it.

Crop combinations of Maize (Co) with Cassava (Ca), Peanut (P), Rice (R) and Sweet Potato (SP)

Figure 3. Cultivation of five food crops by survey sample households

Figure 3 confirms that maize is the most commonly grown crop and is preferably grown together with cassava and/or sweet potatoes. Most farmers use mixed intercropping with maize, cassava and sweet potato planted randomly in the same plot. Only few farmers are planting in rows or dividing their area into smaller plots of each crop. Note that farmers often mix the different varieties they are growing. This specifically affects maize which cross-breeds very easily. As a result the cobs of most local varieties are multi-colored: yellow, white, purple.

A smaller part of the plot is often kept for growing peanuts only (often less than 100 sqm).

Again, the result of this analysis is very comparable to the baseline survey results.



Figure 4. Local maize cob with three different colour grains: yellow, purple and white.

#### **Production of main food crops**

The respondents were asked how much production they obtained from each plot and each variety they grew. Answers were given using local measurement units (rice sacks, drums, etc.) and this data was later converted into kilograms of the actual crop using the conversion table in Appendix IV. The conversion table was based on the data used in the baseline with additional verifications for the common measurements units.

For cassava and sweet potatoes, estimating the production is much more difficult as they are harvested progressively by farmers (occasionally dug up in small quantities to be consumed or sold as needed). Also, more than 70% of cassava and sweet potato growers said they still hadn't finish to harvest the whole plot and therefore, production was not asked to such farmers. Finally, for rice, many farmers hadn't yet harvested their rice at the time of data collection (they were planning to harvest a few weeks or days after the interview). Indeed, data collection was implemented in June-July, while many farmers plant rice only once per year in February-March. This is reflected in the proportion of respondents with "no harvest" for rice (first column of Table 5): 39% of rice growers produced 0kg of rice from July 2012 to June 2013.

Crop production (% of respondents growing th						g the cr	op)	est	_	Б		
Crop		No harvest	Less than 25 kg	25 to < 50 kg	50 to < 100 kg	100 to < 200 kg	200 to < 500 kg	500 to < 1,000 kg	More than 1000 kg	Average harve (kg)	Maximum harvest (kg)	Average area grown (ha)
Maize	MTS	3.6%	13%	8%	15%	19%	29%	9.5%	4%	271	3,960	0.58
	Baseline	0.4%	9%	12%	19%	21%	24%	10%	5%	287	6,300	
Rice	MTS	39%	1%	2%	4%	4.5%	12%	14%	23%	651	5,600	1.86
	Baseline	0.4%	1%	6%	10%	16%	26%	18%	22%	641	8,000	
Peanut	MTS	13%	35%	24%	16%	10%	2%	0	0	43	242	0.28
	Baseline	0.7%	26%	34%	23%	10%	4%	2%	0.5%	75	2,660	
Cassava	MTS	77%	3%	2%	3%	4%	6%	4%	2%	115	9,700	0.70
	Baseline	0.7%	2%	0.9%	18%	23%	34%	14%	8%	370	5,360	
Sweet	MTS	71%	5%	4.6%	5%	6%	5%	2%	1%	70	1,976	0.35
potato	Baseline	0.6%	4%	24%	27%	25%	15%	3%	0.9%	149	3,000	
E A	6			(00 :	040	1.40		4.65	1		0.471	

Table 5. Production of Main Crops

[Answers from crop growers: maize 632, rice 242, peanut 191, cassava 465 and sweet potato 347]

In general, the above table shows a quite low production of maize compared to the average area farmers are growing: yields are about half a ton per hectare. As mentioned earlier, such low yields result from extensive production systems with mixed cropping. The above data are similar to those obtained during the baseline survey: households' production of maize mainly ranges from 50 to 500 kgs, that of rice from 200kg to 1 ton, and that of peanut is much smaller (less than 100kg per family on average).

The majority of maize farmers plant three to four seeds per hole (86% compared to 91% in the baseline) and only 14% plant one to two seeds per hole (9% in the baseline). Such practices are to be modified when growing improved verities such as Sele in order to maximize productivity.

#### 2.2.2 Land use

On average, farmers reported cultivating about 0.85 ha of food crops in the last 12 months prior the interview (June 2012-July2013); minimum: 0.01 ha – maximum: 20.35 ha.

Also, as found in the baseline, a majority of farmers cultivate only one plot for food crops. However, a slightly higher number of plots were reported in the mid-term survey compared to the baseline, which seems believable. It might be that the MTS enumerators were more persisting in order to get the correct answer. Indeed, farmers normally tend to under-estimate the number of plots they cultivate in order not to show their welfare

Number of farming plots cultivated per farmer for food crops							
		(Number a	iu 70 01 103poi	lucitisj			
	One	Two	Three	Four	Five		
МТС	344	238	56	25	9		
MIS	51%	35%	8%	4.5%	1.5%		
Deceline	1,254	499	31	14	1		
Baseline	70%	28%	2%	0.8%	0.1%		
ГА	6 11 (72)	1 / 1					

Table 6. Number of Farming Plots cultivated per Farmer for Food crops

[Answers from all 672 respondents]

In terms of plot size, the average plot area as estimated by farmers is 0.5 ha. Apparently, the mid-term survey respondents have reported slightly smaller plot sizes than the baseline respondents in 2011 (35% of farmers reported plots under 0.25 ha compared to 15% in the baseline). This is most probably linked to the fact that MTS enumerators have been trained to better estimate plot sizes with farmers.

			0			1			
	Size of farming plots used for cultivation of food crops (Number and % of respondents)								
	< 0.25 ha	0.25-0.49 ha	0.5-0.74 ha	0.75-0.99 ha	1-1.49 ha	1.5-1.99 ha	> 2 ha		
MTS	398	305	204	25	154	18	32		
	35%	27%	18%	2%	14%	1.5%	2.5%		
Baseline	370	800	258	58	766	26	128		
	15%	33%	11%	2%	32%	1%	5%		

Table 7. Size of Farming Plots used for Cultivation of Food crops

[Answers from all 672 respondents]

Box 1: Measuring accuracy of farmer's estimations of areas



In order to verify farmer's estimations on their plot's area, 10% of respondents interviewed (69 farmers), had one or more of their lands measured using a simple GPS application installed on a tablet. In total, 81 plots were measured. If the plot was divided into smaller plots planted with different crops or different varieties, each smaller plot was measured seperately.

MTS supervisor measuring the size of a rice field using a tablet. -Aileu-

Errors of estimation for single fields ranged from -100% to +601%. However, overall, the result of this survey was very positive as on average, farmers estimates were very close to the reality: **they over-estimated their plot area only by 7%.** When measuring the smaller plots, it was found that, on average, farmers over-estimated the area of each smaller plot by 6%. Note that enumerators were trained to help farmers in providing more reliable answers: a) when plots were visible from the interview location, the enumerator would estimate visually the plot size with the farmer, b) when plots were far away, farmers were asked to point out an area close to the location of the interview which had a similar size as his plot in order for the enumerator to estimate what could be the actual plot size.

The findings mentioned above are coherent with the findings of Myrtille Lacoste who conducted a similar research in May 2009 for Seeds of Life and found that, when looking at average estimations among 44 farmers, farmers under-estimated their fields by 14% only (*"Farmers' estimation of planted areas: measurement of accuracy", Myrtille Lacoste, May 2009*).



About 52% of the areas were under-estimated and 49% over-estimated. The following chart shows the number of plots estimated within each category of error.

In conclusion, when looking at individual cases, the farmer's estimations can be very far from the reality. However, the majority of farmers stay within a reasonable range of error that compensates itself when averaging all the farmers' estimations. Therefore, in this survey, all analysis will be done with farmer's initial estimations.

The number of main crops grown per farming plot is coherent with what was obtained during the baseline survey: 38% of the plots are used for growing only one crop (those are mainly rice fields) and 62% are grown with two or more crops.

						*	0		
		Number of main crops cultivated per farming plot (% of plots cultivated with this number of crops)							
	cultivated	One	Two	Three	Four	Five	Six	Seven	Eight
Mid-term	1,136	438	173	256	200	67	2		
survey	100%	38%	15%	23%	18%	6%	0.2%		
Baseline data	2,406	794 33%	508 21%	572 24%	339 14%	122 5%	47 2%	24 1%	8 0.3%

Table 8. Number of Main Crops Cultivated per Farming Plot

[Answers from all 672 respondents]

More than 80% of the farmers planting maize together with other crops on the same plot, do not plant in row and do not separate the crops. Less than 20% of them divide their plot into separate parcels for each crop or variety.



Figure 5. Enumerator measuring the size of a plot with cassava, sweet-potato and maize planted in mixed-inter-cropping – Manufahi

#### 2.3 Adoption of MAF/SoL varieties

#### 2.3.1 Adoption rates combined

Table 9 presents the adoption rates measured during the MTS and the baseline survey. Overall, for the period July 2012-June 2013, it is estimated that 24.6% of food crop farmers in Timor-Leste have grown at least one of the varieties released by MAF/SoL. Considering the 5% margin of error, this percentage could vary between 23.4% and 25.8%.

	Crop growers	MAF/SoL adopters	% of MAF/SoL adopters	% of male headed households adopters	% of female headed households adopters
MTS: 13 districts	672	165	24.6%	25.4%	14.3%
				(153 cases)	(8 cases)
MTS: 11 districts <sup>10</sup>	561	129	23%	23.7%	13.6%
				(119 cases)	(6 cases)
Baseline	1,510	270	17.9%	17.9%	17.2%
(11 districts)				(249 cases)	(21 cases)
F ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (					

Table 9. MAF/SoL Varieties Adoption Rates – National level

[Answers from all 672 respondents]

Adoption has progressed significantly since the baseline survey: +6.7 points in two years time (baseline collected data for the period October 2010 – September 2011).

Also, two different figures for the MTS adoption rate are presented (including or excluding Viqueque and Lautem districts) because the baseline adoption rate of 17.9%

was calculated over 11 districts only. Indeed, data collected in those two districts were inaccurate and therefore taken out of the analysis. When comparing adoption rate among 11 districts only, there is a slightly lower increase in adoption: +5.1 points.

Finally, note that there appears to be a difference of adoption between male and female-headed households in the MTS (about +10 points for male headed households). However, this difference isn't statistically significant, meaning that the difference is too small to actually conclude that male-headed households have a better access to MAF/SoL seeds than female-headed households. A larger sample would probably have shown that there is nearly no difference between those two groups, as revealed in the baseline survey.



Figure 6. Respondent in Ermera growing Sele

<sup>&</sup>lt;sup>10</sup> Without Viqueque and Lautem

When looking at regional level (Table 10 and Figure 7), one can see an important progress in the Central region as well as Western region: 6 points increase in both regions. The Eastern region shows much less progress, however data from Lautem and Viqueque were excluded in the baseline survey which might explain this situation. Indeed, 2011 adoption rates in Lautem and Viqueque could have brought down the average for the Eastern region to less than 30% adoption in the baseline survey.

,	1	0		
		Crop	MAF/SoL variety	% of crop
		growers	growers	growers
East	MTS	229	74	32%
Lautem, Viqueque, Baucau, Manatuto	Baseline <sup>11</sup>	305	96	31%
Center	MTS	133	34	26%
Manufahi, Aileu, Ainaro, Dili	Baseline	378	74	20%
West	MTS	310	57	18%
Covalima, Ermera, Liquica, Oecusse, Bobonaro	Baseline	827	100	12%

Table 10. MAF/SoL Varieties Adoption Rates – Regional level



[Answers from all 672 respondents]

Figure 7. Adoption rate by region

A second type of break-down is presented in Table 11 to compare the situation in districts where Seeds of Life has been working intensively since 2005, and other districts where Seeds of Life presence is more recent.

<sup>&</sup>lt;sup>11</sup> Without Viqueque and Lautem

,	P		5	
	Cron		MAF/SoL	% of
		growors	variety	crop
	growers		growers	growers
Districts of early SoL2	MTS	202	72	36%
Baucau, Manufahi, Aileu,	Baseline	539	161	30%
Liquica				
SoL3 districts	MTS	470	93	20%
Other 9 districts	Baseline	971	109	11%

Table 11. MAF/SoL Varieties Adoption Rates – Program level

[Answers from all 672 respondents]

Firstly, there is a clear difference between districts where SoL has been working for 6-7 years already and districts where SoL is present less long: there are nearly twice as many adopters in the first SoL districts. This is very promising for other districts as it is likely that they will follow the same evolution during the coming years. Already between 2011 and 2013, more change can be observed in "new districts": +9% compared to +6% in SoL2 districts. This reflects the effectiveness of the work of SoL3 in the field as well as the work of its partners promoting MAF/SoL improved varieties in locations where SoL has been less active so far.



Figure 8. Distribution of adopters according to the length of presence of the Program

#### 2.3.2 Adoption rates per variety

	Bas	eline	MTS		
	# crop growers	Adoption among crop growers	# crop growers	Adoption among crop growers	
Sele	1,219	13%	640	15%	
Noi-Mutin	-	-	640	2%	
Nakroma	542	11%	250	15%	
Utamua	319	16%	196	11%	
Ai-luka	1,248	3%	575	3%	
Hohrae	768	7%	401	7%	

Table 12. MAF/SoL Varieties Adoption Rates (% among crop growers)

[Answers from all 672 respondents]

For cassava, Ai-luka 2 and 4 were grown respectively by 2.3% and 0.9% of respondents, while 3% and 1% were growing these two varieties during the baseline survey<sup>12</sup>. For sweet-potato, Hohrae 1, 2 and 3 were grown respectively by 3.7%, 2.7% and 2% of respondents, compared to 6%, 2% and 2% at the time of the baseline survey.

#### Sele

There has been an increase of 2 points in adoption of Sele since the baseline survey. Sele is much appreciated for its high yielding, resistance to strong winds and heavy rains. The new maize variety Noi-Mutin (released in mid-2012) is now adopted by 2% of maize growers. It is important to mention that 15% of Sele adopters do not include respondents who have grown Sele for a few years but whose maize crop is now mixed with local varieties.

Similarly, some farmers may have grown Sele just before the period targeted by the MTS (July 2012-June 2013) but weren't counted as Sele adopters because they didn't grow Sele anymore during these specific 12 months. This might be the case if farmers stored Sele cobs in a traditional way (bundle of tied-up cobs) during the previous year and weren't able to prevent severe weevil infestations, and therefore lost their



Figure 9. Traditional storage method in Manufahi: about 200 cobs tied up together in a bundle

Sele seeds. As with other maize varieties producing big cobs, Sele is more sensitive to weevils than local varieties<sup>13</sup> simply because cobs sheaths are loose and therefore open to weevil infestation. However, with proper drying and storage practices (sealed airtight

<sup>&</sup>lt;sup>12</sup> The percentages of Ai-Lika 2 and 4 growers cannot simply be added up to give the adoption rate of Ai-Luka combined. A farmer may grow both varieties – or any other MAF/SoL variety – but will only be counted once as an "adopter of an improved variety".

<sup>&</sup>lt;sup>13</sup> SoL Annual Research Report 2012: in Betano (2011), 43% weevil damage was observed on Sele compared to 16% and 18% on the local varieties Fatulurik and Kakatua.

containers such as drums or screw-top plastic bottles), post harvest losses can be dramatically reduced.

#### Nakroma

The adoption of this variety has also increased (+ 4%). Nakroma is much appreciated for its high production and resistance to diseases. In some sucos, Nakroma has now become the main rice variety grown (for example in Ritabu or Raifun sucos, Bobonaro). It is very likely that adoption of Nakroma will continue to increase as no particular drawback has been reported during the MTS (during interviews, informal discussions or focus groups).

#### Utamua

The adoption of Utamua has decreased since the baseline survey. There isn't any significant drawback regarding this particular variety that could explain a decrease in adoption. It is possible that the baseline data was also over-estimated, especially given the fact that farmers may have said they grew Utamua simply because "Utamua" means "peanut" in Makasae local language. Such confusion is less likely to have happened during the MTS as enumerators were warned in advance about this type of problem.

A number of points however have also been raised by Utamua growers and are interesting for SoL3 to take into consideration. For example, the fact that germination of Utamua isn't as high as farmers expected (mentioned in suco Vaviquinia, Liquica) or the fact that pods are sometimes empty or spoiled/black. Therefore, in many cases, the distributed Utamua seeds have to be reselected before they are planted.

Some key messages might need to be better extended to farmers. For instance, the fact that it is normal for peanuts to have a lower germination rate than other crops (70% compared to 95%); or the fact that Utamua seeds won't germinate as well as local varieties in dry soil and need to be soaked in water first if the soil is too dry.

#### Ai-Luka and Hohrae

Both varieties have the same adoption rates as at the time of the baseline survey. In general, only good feedback was collected regarding those varieties: very high yielding compared to local varieties, good taste, especially for Hohrae. However, several issues need to be raised here:

- The MTS adoption rate of those two varieties might be under-estimated. Indeed, it is very difficult for enumerators to spot Ai-luka or Hohrae in a plot where at least three different varieties of cassava or sweet potatoes are planted in a scattered way (usual cropping system). Such farmers probably haven't been captured in the MTS, unless they clearly mentioned that they also grew some cuttings of other high-yielding varieties, which could then be cross-checked by the enumerator.
- Unlike other varieties that have been massively distributed by MAF and its partners, the distribution of cassava and sweet potato cuttings is still limited simply because cuttings are more difficult to store and transport. Indeed, cuttings need to be carefully manipulated and planted maximum three days after being cut. SoL has recently implemented a fast-track distribution of more than 18,000 stems of Ai-Luka and 226,000 cuttings of Hohrae throughout the country, but not

all cuttings have survived. Indeed, there are only three main sources of cuttings in the country (Loes, Betano and Viqueque) and a lot of logistic is required to distribute these cuttings throughout the country.

#### 2.3.3 Adoption of multiple varieties

Figure 10 shows how many percent of all the adopters grow 1, 2, 3, 4 or 6 different MAF/SoL varieties. A very large majority of adopters are single variety adopters. Among those growing more than one variety, the combination Sele/Nakroma or Sele/Utamua is the most frequent, simply because they are the most accessible varieties for now in the districts.



Figure 10. Percentage of farmers growing one or more MAF/SoL varieties

### 2.3.4 Discussion on identification of MAF/SoL varieties and adoption rates

Getting an accurate estimate of the adoption rate entirely relies on the data collectors' ability to identify which varieties are grown by farmers. This section discusses the challenges encountered in identifying properly the varieties grown.

### Recalling varieties' names

The fact that farmers do not know the name of the varieties they are growing is mainly due to a lack of education but also a lack of access to information. Indeed, farmers are not always told the name of the variety they are receiving from a MAF staff or NGO staff. Actually, it is sometimes also difficult to get clear information from the SEOs themselves regarding what varieties they have distributed. In Ainaro, a local leader told us she was recently given a bottle containing "yellow maize seeds" but wasn't able to say if it was of any specific variety. After checking, it appeared that it was Sele and "SELE" was written in big letters on the bottle's packaging (part of the IFAD-SoL recent distribution program). This example shows that knowing the name of a variety isn't important for farmers.

#### Names of MAF/SoL varieties

MAF/SoL varieties were often named using local language common words: "Sele" means "maize" in Makasae and Fataluku, "Utamua" means "peanut" in Makasae and "Ai-Luka" means "cassava" in Tetun Terik. Those local languages are spoken in more than half of the country. The varieties' names progressively fall into the generic category of "maize" or "peanuts".

#### Exchanges between farmer and estimation of multiplier effect

It is very difficult to identify adopters who have received seeds/cuttings from another farmer as the name of the variety isn't passed on between farmers. Figures also confirm that the diffusion of MAF/SoL varieties from farmer to farmer might be underestimated: 57% of farmers said they have shared some MAF/SoL variety seeds and cuttings with others but only 10% of adopters have reported receiving some seeds/cuttings of MAF/SoL varieties from another farmer. Therefore, the multiplier effect representing the diffusion from farmer to farmer is probably somewhere between 1.1 and 1.5. At the same time, "57% of respondents sharing seeds with other farmers" is most likely over-estimated (sometimes respondents meant "sharing food", not seeds). Thus, the real multiplier effect might be between 1.1 and 1.4.

#### Loss of genetic purity

For maize especially, cross-breeding happens very quickly. Therefore, a Sele crop might produce very identifiable cobs the first growing cycle (color, size) but mixed-color cobs the second cycle, especially if it's grown less than 200m away from a plot with another maize variety. When cross-breeding was high, it was difficult for data collectors to be sure if it was still Sele or not. That was often the case in Liquica where farmers have been growing Sele for seven years already. Some farmers even store seeds of different varieties in the same containers, making it impossible to then plant varieties in separate plots (see Figure 12 – picture 1).

#### Variations

Variations exist among single varieties. For example, Sele might in very rare cases contain some purple grains, which if they aren't isolated, can contaminate an entire crop within two years time (see Figure 12 – picture 3).

#### Similarities with local varieties

Some MAF/SoL varieties are similar to some local varieties grown in specific locations. The MTS team came across some of these varieties. Here are a few examples:

- ✓ The sweet potato "Maubere Mutin" commonly grown in one aldeia of suco Aitutu (Ainaro district), is very similar to Hohrae 2: leaves' shape, tubers' inside and outside color as well as size (see Figure 12 picture 4). The only visible difference was the color of the leaves' nerves: red for Hohrae 2 and green for Maubere.
- ✓ In Bobonaro (suco Tapo Memo), farmers grow a local big white variety of maize very similar to Noi-Mutin (see Figure 12 – picture 2).

- ✓ The local cassava "Fuik" or "Nona Mutin" commonly grown across the country is very similar to Ai-Luka 2 when the tree is old: green trunk and green-red leaf stems.
- ✓ In Baucau (suco Sagadati) enumerators came across another big peanut variety farmers are growing since the Indonesian time. The main difference is that some pods may contain up to three seeds while Utamua pods usually have one to two seeds per pod.

#### Truthfulness of answers

Many farmers prefer not to mention they have received seeds from an NGO or MAF. Indeed, farmers often hope that they might receive seeds at the end of the interview if they say that they didn't have access to quality seeds in the past. Therefore, many farmers would rather say they are only growing local varieties and have never been supported by any organization.

In conclusion, given all these constraints, there is a high probability that the adoption rate is under-estimated. One could say that 24.6% adoption is rather more representative of the farmers' perception than of the reality. However, this figure definitely gives an order of magnitude of the actual adoption rate: between 23.4% and 25.8% according to the sample size calculation and perhaps slightly higher when bearing in mind the above considerations.



Figure 11. Group plot planted with Hohrae 1 and Ai-Luka 2 and 4, distributed during the fast-track distribution in April 2013 – Ermera -


Sele contaminated by other local varieties

Local varieties similar to Noi Mutin

Figure 12. Examples of difficulties in variety identification





"Red Sele"

Local sweet potato variety similar to Hohrae2

#### 2.3.5 Factors influencing adoption

Among all the data collected, the following factors appear to be influencing adoption:

- Involvement of the family in Seed Production Groups
- Involvement of the respondent in Agricultural Groups
- Knowledge of the existence of a seed production group
- Relation of the family with the extension worker
- Experience of hungry season

Table 13 summarizes the main figures of these correlations.

Table 13. Correlations between adoption and various	Tactors		
	Percentage among total	Number of valid cases	Percentage among
	sample		adopters
Respondent is a member of a seed production group ***	13%	87	26%
Respondent's family member(s) is(are) a member of a seed production group **	12%	70	21%
Respondent is a member of an agricultural group *	28%	188	35%
Respondent knows about the existence of a seed production group in his village ****	25%	147	45%
Respondent knows the village extension worker **	61%	409	73%
Services provided to the respondent by the extension worker:			
- Visits **	71%	290	84%
<ul> <li>Seeds distribution ****</li> </ul>	45%	408	63%
- Training **	48%	198	63%
Respondent's family member(s) know(s) the extension worker *	67%	397	78%
Respondents declaring his family has experienced a hungry season *	84%	564	77%

Table 13. Correlations between adoption and various factors

*The more powerful the correlation, the higher the number of stars.* 

Some interesting learnings can be drawn from this data:

- Seed production groups and extension workers are the two main channels of accessing seeds for the moment at suco level. Regarding groups, it can be that farmers are members of seed production groups or simply know about a seed production group in the suco. Therefore, these two delivery channels need to be strengthened in order to increase adoption of MAF/SoL varieties.
- Agricultural groups are also a way to access seeds. Indeed, most free seeds distributions from MAF or NGOs are organized through agricultural groups. A farmer who isn't a member of an agricultural group has therefore less probability to receive seeds. This is to be considered when facilitating access to quality seeds for the most vulnerable because many aren't part of these groups.
- Lastly, adoption is negatively correlated to hunger (farmers were asked if their family experienced a "hungry season" in the last 12 months). In simple terms, adopters experience less hunger than non-adopters. SoL's food-security goal is therefore on track.

#### 2.4 Analysis per crop

#### 2.4.1 Diversity of varieties grown

The following charts show the evolution since the baseline of the percentage of crop growers growing each variety. Here are some interesting findings:

- Maize: There are significantly less main season maize (*batar bo'ot*) and quick growing maize (*batar lais*) growers (-6 and -24 points) since the baseline survey while the percentage of Sele growers has increased (+2 points).
- Rice: The proportion of high yielding variety growers such as IR-64 and Nakroma growers have significantly increased (+15 and +4 points).
- Peanut: Adoption of Utamua has decreased while the proportion of local varieties has significantly increased. However, in the baseline, 64% of farmers didn't remember the name of the variety they were growing. Assuming a majority of these farmers were growing a generic local "mean" or "mutin" variety, there probably isn't such an important increase in proportion of farmers growing local peanut varieties in comparison to Utamua.

Note that in the MTS, most farmers also didn't have a specific variety name in mind but were still categorized as growing "Mean" or "Mutin" (meaning red and white in Tetum) if the farmer said he grew a local red or white variety.

- Cassava: In general, proportions are very similar to the baseline survey data, including for Ai-luka 2 and 4.
- Sweet potato: A part from the significant decrease in proportion of growers planting the "local mutin" variety, proportions of other varieties haven't changed much since the baseline.



Figure 13. Proportion of local and MAF/SoL varieties grown per crop<sup>14</sup>

<sup>&</sup>lt;sup>14</sup> In the rice chart, "Hare boot" includes varieties grown in 3.5-4 months such as IR-54, IR-36 or Nona Portu. "Hare lais" includes shorter cycle varieties (three months only) such as Resa Mata, hare mean and Leto Mori.

Other also includes varieties for which farmers have forgotten the name.

#### Box 2: Identification of the different local varieties

Similar limitations as for the identification MAF/SoL varieties exist for the identification of local varieties. Indeed, apart from rice varieties, many farmers weren't able to list the names of the local varieties they were growing.

From one region to another, farmers may give different local names to the same variety: in Liquica, the sweet and white cassava variety is called Nona Metan while it is called Maukafir in Ermera. In many cases, farmers would simply say: "I am growing a red and a white sweet potato" or "I am growing a small white cob maize and a big yellow cob maize" or again "I am growing a sweet cassava variety and a bitter one".

To get accurate data, each enumerator had to check each of these varieties by looking at the plant, the harvest, asking about production, etc. That is impossible given the number of different varieties grown. Actually, besides for MAF/SoL varieties, there probably isn't any reliable data available in Timor-Leste regarding which varieties are grown in the country (especially local ones) and their characteristics.

Therefore, the categories of varieties as listed in the questionnaire are rather a guidance to help classifying farmers rather than a detailed and accurate list of varieties. For example, all the farmers growing "mean" and "mutin" peanut varieties as listed in the questionnaire are in reality probably growing different types of red and white varieties. Also, "batar bo'ot" is probably including different varieties with similar characteristics: big cobs, at least 4.5 months to harvest, and not obtained from MAF or NGO.



In conclusion, the proportion of each local variety is interesting to provide a general understanding of the situation but it is recommended not to use this data to draw conclusions.

Table 14 shows how many different varieties farmers are growing for each food-crop surveyed. In order of importance, cassava, sweet potato and maize are the crops for which farmers are growing the biggest number of varieties per farmer. In general, farmers are growing a smaller number of varieties since the baseline survey, especially for cassava. Given the limitations mentioned earlier, there is also a possibility that this data isn't very accurate, especially if some farmers are planting only a small quantity of a specific variety and has forgotten to mention it. This might be less the case in the baseline where enumerators had a checklist of varieties they had to go through for each crop.

	1	2	3	4+
MTS	84%	15%	1%	
Baseline	69%	29%	2%	0.1%
MTS	92%	8%	0.4%	
Baseline	90%	8%	1%	1%
MTS	96%	3%	1%	
Baseline	97%	3%		
MTS	73%	23%	4%	
Baseline	48%	40%	10%	2%
MTS	69%	30%	1%	
Baseline	50%	47%	2%	1%
	MTS Baseline MTS Baseline MTS Baseline MTS Baseline MTS Baseline	1MTS84%Baseline69%MTS92%Baseline90%MTS96%Baseline97%MTS73%Baseline48%MTS69%Baseline50%	1         2           MTS         84%         15%           Baseline         69%         29%           MTS         92%         8%           Baseline         90%         8%           MTS         96%         3%           Baseline         97%         3%           MTS         73%         23%           Baseline         48%         40%           MTS         69%         30%           Baseline         50%         47%	1         2         3           MTS         84%         15%         1%           Baseline         69%         29%         2%           MTS         92%         8%         0.4%           Baseline         90%         8%         1%           MTS         96%         3%         1%           MTS         96%         3%         1%           Baseline         97%         3%         1%           MTS         73%         23%         4%           Baseline         48%         40%         10%           MTS         69%         30%         1%           Baseline         50%         47%         2%

Table 14. Proportion of farmers growing 1, 2, 3 or 4+ different varieties per crop

[Percentages among total sample – 672 HH]



Figure 14. Traditional storage method of maize cobs

#### 2.4.2 Analysis of MAF-SoL varieties

#### Uptake throughout the country

Uptake of MAF/SoL varieties occurred in all districts, with a majority of farmers growing one variety only. In some sucos no adopters were encountered in the sampled respondents, which shouldn't be interpreted as a zero adoption in that suco, but simply as the result of the random methodology. Adoption of more than one variety was observed mainly in Baucau, Liquica, Aileu and Ermera. A farmer in Lautem, suco Tutuala, is now growing six MAF/SoL varieties.

Figure 15 on the next page compiles three maps displaying GPS locations of respondents growing Sele, Nakroma and Utamua.







Figure 15. GPS locations of Sele, Nakroma and Utamua adopters interviewed throughout the country

- Sele: This variety is very well spread all over the country, except in Bobonaro where the most populated sucos visited were in the low lands. In more than half of the sucos visited, at least one farmer growing Sele was interviewed. When compared to the number of maize growers interviewed per district, Liquica, Aileu and Manatuto have higher proportions of Sele growers. The first two districts are districts where SoL has been working since Phase 1. All three districts are also closer to Dili which supports the idea that a district's accessibility is an important factor in accessing improved varieties.
- **Nakroma:** There isn't a wide coverage across the country but rather centralization in specific districts which are districts of higher rice production. More specifically, Aileu, Baucau and Viqueque had the highest number of Nakroma growers. Surprisingly, in Bobonaro where rice production is also important, few Nakroma growers were met; most farmers there grow the variety IR64. A number of sucos outside the sample are known for having widely adopted Nakroma but were not sampled for this MTS.
- **Utamua:** Finally for Utamua, adoption seems very scattered mainly because the total number of Utamua growers interviewed is 22, which is very small when looking at a national map. Interestingly, some of them were located in Oecusse where SoL has been working only very recently.

#### Source of seed

Table **15** shows the source of seeds or cuttings as reported by respondents. The first observation is that in the baseline survey, the main source of MAF/SoL seeds/cuttings was NGOs while it now appears to be MAF. This shows that MAF has now taken a lead role in diffusing improved varieties.

Secondly, the data shows that the proportion of farmers who kept seeds from a previous harvest has decreased for all MAF/SoL varieties, except Utamua. This would suggest that farmers are still very dependent on outside sources (free distribution, market) to continue growing the MAF/SoL varieties in the next season. Even though the data from the MTS might be under-estimated, it still points out the need to inform farmers about how to grow (i.e. with respect to isolation), select and store seeds properly.

% of respondents mentioning source of	Se	ele	Noi-Mutin	Nakro	oma
Source of seed	Baseline	MTS	MTS	Baseline	MTS
Given for free by an NGO	39%	15%	14%	45%	18%
Given for free by the Government	25%	52%	44%	22%	61%
Own seed, saved from a previous	21%	15%	14%	26%	5%
harvest					
Bought in market	12%	10%	14%	2%	
From a relative / neighbor / friend	2%	7%	14%	2%	13%
Other	1%	1%		3%	3%

Table	15.	Sources	of seed	/cutting
rabie	101	0000000	or beea	caccing

% of respondents mentioning source of	Utamua		Ai-lı	uka	Hohrae	
Source of seed	Baseline	MTS	Baseline	MTS	Baseline	MTS
Given for free by an NGO	39%	18%	36%	7%	35%	
Given for free by the Government	6%	41%	14%	60%	11%	59%
Own seed, saved from a previous	25%	32%	29%	7%	22%	15%
harvest						
Bought in market	12%	9%	2%		10%	4%
From a relative / neighbor / friend	14%		14%	13%	22%	22%
Other	4%		5%	13%		

[96, 12 38, 22, 15 and 27 farmers planting Sele, Noi Mutin, Nakroma, Utamua, Ai-Luka and Hohrae answered this question]

Thirdly, some very encouraging data is the increasing number of farmers receiving Nakroma and Sele seeds from a relative/neighbor/friend. Overall, about 10% of adopters have reported sourcing their seed from another adopter. This shows that farmers value these varieties and try to find "informal" ways to obtain them. Also it is important to note that for now, the Community Seed Production Groups (CSPGs) are not yet a significant source of seed for farmers outside the group. This MTS was done at an early stage of the CSPG development process: groups formed in 2011 have started to share seeds with their members late 2012 and groups formed in 2012 have just accomplished the first cycle of seed multiplication in the groups' land. Therefore, it is likely that the impact of CSPGs in terms of diffusion in the sucos will be more visible from 2014 onwards.

Finally, purchasing seeds or cuttings is still very rare (7% of adopters). Indeed, the general context of large-scale free seed distribution doesn't provide any incentive for farmers to buy seeds.

#### Area and production data

Table 16 shows how much area is grown under MAF/SoL varieties; and for adopters who are also growing a local variety, the table presents how much of the farmers total crop area the MAF/SoL variety represents.

Interestingly, more than 75% of Noi-Mutin, Utamua, Ai-Luka and Hohrae adopters do not grow another maize, peanut, cassava or sweet potato variety. And for those who are growing also another variety, they keep more than 85% of their crop area for the MAF/SoL variety.

On the other hand, all "Nakroma-adopters" also plant another variety and use about half of their rice field areas for Nakroma (43% of total rice area - about 0.8 ha).

Also, it is interesting to note that more than half of the adopters who are usually growing two cycles per year of maize or rice or peanut or sweet potato have decided to include the MAF/SoL variety they grow in both cycles.

Table 17 shows average production of MAF/SoL varieties per household. When looking at average harvests, all MAF/SoL varieties (except Utamua) have a higher average production than the average production harvested when including all other varieties. For example, Sele's average harvest is 382 kg when the average harvest of maize per household (all varieties together) is 271 kg. For Utamua, the average harvest is 29 kg when it is actually 43Kg when including all varieties.

	% among total variety adopters and areas per variety adopters										
	< 0.25 ha	0.25-0.49 ha	0.5-0.74 ha	0.75-0.99 ha	1-1.49 ha	1.5-1.99 ha	>2ha	Average area under MAF/SoL variety (ha)	Maximum area under MAF/SoL variety (ha)	% of variety adopters growing only the MAF/SoL variety	Average % of crop area grown under the MAF/SoL variety
Sele	36%	24%	19%	2%	10%	5%	4%	0.5	2	55%	85%
Noi-Mutin	21%	29%		7%	29%		14%	0.8	2.66	93%	95%
Nakroma	19%	22%	19%	3%	27%	3%	8%	0.8	4	0%	43%
Utamua	68%	5%	16%	5%		5%		026	1.6	89%	94%
Ai-luka	31%	36%	14%		14%		14%	0.6	2	79%	86%
Hohrae	54%	23%	15%		4%		4%	0.3	2	76%	86%

Table 16. Area grown with MAF/SoL varieties

[83, 14, 37, 19, 14 and 26 farmers planting Sele, Noi Mutin, Nakroma, Utamua, Ai-Luka and Hohrae answered this question]

When comparing the data to average yield expectations for MAF/SoL varieties, the actual yields of Sele and Noi-Mutin are far under their potential (2.5T per hectare). This is partly because maize is planted in mixed cropping which may significantly reduce its productivity, and also due to the low fertility of the soils and quasi absence of fertilization. Actual yields of Nakroma and Utamua also appear to be far under the potential of these varieties. In general, it is very difficult to collect accurate production data unless farmers have been monitored by technical staff. However, there is definitely room for yield improvement, especially for varieties where specific attention is needed during certain steps of the production cycle. Also, Utamua needs to be soaked and planted in moistured soil to maximize germination.

		0	0					
	No harvest	<100kg	100 to 199 kg	200 to 499 kg	500 to 999 kg	> 1000 kg	Average harvest (kg	Maximum harvest (kg
Sele	4%	31%	14%	31%	15%	6%	382	3960
Noi-Mutin		17%	25%	42%	17%		328	900
Nakroma			14%	24%	29%	33%	779	2040
Utamua	11%	83%	6%				29	195
Ai-luka	50%			50%			180	432
Hohrae	12%	38%		38%	12%		266	920

Table 17. Average production of MAF/SoL varieties per household

[81, 12, 21, 18, 4 and 8 farmers planting Sele, Noi Mutin, Nakroma, Utamua, Ai-Luka and Hohrae answered this question]

The quantities of seeds reported for Sele, Noi-Mutin and Nakroma in Table 18 seem consistent with the average area grown by farmers. For Utamua, the quantity of seeds reported is on average too low compared to the area grown.

For Ai-Luka and Hohrae, estimations were made on the number of cuttings planted whenever farmers were growing only small quantities or when they were following a structured planting system (same planting distance, in line), and that is only 24 cases. The average quantity of cuttings used is believable but might be over-estimated given that most farmers do not plant only Ai-Luka or Hohrae but also grow other varieties on the same plot.

	Average quantity (kg)	Maximum quantity (kg)
Sele	10	36
Noi-Mutin	16	40
Nakroma	33	182
Utamua	8	45
Ai-Luka	9302	55611
Hohrae	7865	40000

Table 18. Average quantity of seeds and cuttings used

[86, 13, 37, 20, 8 and 16 farmers planting Sele, Noi Mutin, Nakroma, Utamua, Ai-Luka and Hohrae answered this question]

#### Perception of increased productivity

All together, 88% of farmers who expressed their opinion on how the productivity of MAF/SoL varieties compared to local varieties said they were higher. The productivity was rated the same as that of local varieties by 6% of the respondents and lower by another 6% of respondents. Overall, this result is very positive for the Seeds of Life program as it shows that farmers recognize the high yielding potential of these varieties.

For the MTS, a scale was used to help farmers estimate how much more the MAF/SoL variety produced compared to a local variety (Appendix V). The scale gave farmers the possibility to choose among six options: -33% yield, same as local variety, +33% yield, +66% yield, +100% yield, +133% yield. Overall, farmers gave a +57% yield increase for MAF/SoL varieties compared to local varieties.

% among variety adopters perceiving a decrease/stable/increase productivity and average yield increase estimations											
	Decre	ase	Sam	ıe	Incre	ase	Average yield increase				
	Baseline	MTS									
Sele	2%	3%	18%	4%	80%	93%	+63%				
Noi-Mutin	-	7%	-		-	93%	+58%				
Nakroma		5%	7%	16%	93%	79%	+44%				
Utamua	4%	14%	4%	5%	89%	81%	+36%				
Ai-Luka			10%	7%	90%	93%	+58%				
Hohrae	1%		1%	4%	96%	96%	+72%				
Combined	2%	6%	10%	6%	88%	88%	+57%				

Table 19. Perception on MAF/SoL varieties productivity compared to local varieties .

[76, 12, 27, 14, 4 and 10 farmers planting Sele, Noi Mutin, Nakroma, Utamua, Ai-Luka and Hohrae answered this question]

Among all varieties, Hohrae 1, 2 and 3 are perceived as the most productive in comparison with local varieties. Utamua and Nakroma are perceived as higher yielding varieties but not as much as other MAF/SoL varieties. For Utamua, most of this perception comes from the fact that Utamua pods have one to two seeds per pod while local varieties have three to four. Actually the seeds of Utamua are much bigger than the local ones what compensates for the smaller number of seeds per pod, but this isn't perceived as such by the farmers. Regarding Nakroma, the availability of local high yielding varieties as well as the adoption of other high yielding varieties (IR 64 mainly) probably affects the perception farmers have of Nakroma.

#### **Plan for future**

Adopters were asked a number of questions on their strategy for the coming cropping season: whether they would plant again the MAF/SoL variety, how much area would they grow, and would they also grow a local variety. It is important to mention that most farmers do not plan in advance what they will grow, how much area they will grow, etc. Actually, a number of farmers end up eating the seeds because they finished their food stock. Also, some external factors may affect farmer's plans: lack of rain preventing farmers from planting on time, weevil infestations, etc. In conclusion, the following data shouldn't be perceived as what will actually happen but provides an interesting indication of the farmers' appreciation of the varieties.

	Baseline	MTS
	% among variety adopters	% among variety adopters
	giving an answer	giving an answer
Sele	75%	98%
Noi-Mutin	-	100%
Nakroma	99%	97%
Utamua	96%	92%
Ai-Luka	100%	92%
Hohrae	100%	95%

Table 20. Plans for growing again the MAF/SoL varieties

[79, 11, 30, 13, 12 and 21 farmers planting Sele, Noi Mutin, Nakroma, Utamua, Ai-Luka and Hohrae answered this question]

On average, more than 90% of variety adopters plan to grow again the MAF/SoL variety during the next cropping cycle (Table 20). For maize, there is a significant increase in the percentage of people planning to replant the MAF/SoL varieties. This might be because the MTS was conducted in June-July, about five months before the next maize growing season, while the baseline survey was conducted in October, only one month before the next growing season. It might be that some farmers who are now planning to grow Sele next season have no more seeds to plant by November.

The reasons for not replanting a MAF/SoL variety are that farmers estimated production was too low (two cases), and that the variety wasn't adapted to the soil or climate (two cases).

Table 21 shows that on average, 37% of farmers who plan to re-plant the MAF-SoL variety plan to increase the area grown, while 59% plan to grow a similar area as the one they just grew. Noi-Mutin and Hohrae are the varieties for which a higher

proportion of farmers would like to increase the area grown. On the opposite, Utamua is the variety for which a higher proportion of farmers plan to decrease the area grown (12 farmers answering this question only).

	Will grow a smaller area	Will grow a similar area	Will grow a larger area
Sele	3%	60%	37%
Noi-Mutin	-	36%	64%
Nakroma	-	69%	31%
Utamua	17%	58%	25%
Ai-Luka	9%	82%	9%
Hohrae	-	45%	55%

Table 21. Area of MAF/SoL variety planned to be grown

[75, 11, 29, 12, 11 and 20 farmers planting Sele, Noi Mutin, Nakroma, Utamua, Ai-Luka and Hohrae answered this question]

Then, adopters were asked if they would also like to plant another variety as well or only the MAF/SoL variety (Table 22). On average, half of adopters still plan to grow a local variety and plan to grow on a similar area as that of the MAF/SoL variety. However, a majority of Hohrae growers plan to grow a larger area of Hohrae than of the local variety. This data confirms what was seen earlier, which is that Hohrae is the most appreciated variety for its high yield. The main reasons for wanting to keep growing another variety is first a matter of taste, and second, that post harvest losses of the MAF-SoL varieties are deemed too high. What wasn't mentioned here but which is certainly the case is that growing several varieties reduces the risk of losing the whole crop.

	Plan to plant another variety		Plan to plant another variety (% among valid answers)		Reason for wanting to plant another variety as well? (number of farmers)				
	% among valid answers	# of cases	Sol =Other	Sol <other< td=""><td>Sol &gt;other</td><td>Post- harvest losses</td><td>Taste</td><td>Insufficien t seeds</td><td>Other</td></other<>	Sol >other	Post- harvest losses	Taste	Insufficien t seeds	Other
Sele	43%	33	49%	15%	36%	6	10	4	13
Noi-Mutin	55%	6	67%	17%	17%	2	3		1
Nakroma	41%	12	42%	33%	25%		4	1	6
Utamua	58%	7	57%	14%	29%	3	3		1
Ai-Luka	55%	6	67%	17%	17%	2	2		1
Hohrae	38%	8		38%	62%	3	2		3

Table 22. Planting again a local variety

[33, 6, 12, 7, 6 and 6 farmers planting Sele, Noi Mutin, Nakroma, Utamua, Ai-Luka and Hohrae answered yes to the first question and then answered the following questions]



Figure 16. Community Seed Production Group in Liquica, and Utamua produced by the group

#### 2.4.3 Analysis of other varieties

#### Source

For all crops surveyed, the main source of non-SoL varieties is seeds saved from their previous harvest (76% of peanut growers, 80% of rice farmers, 85% of maize and sweet potato farmers and 90% of cassava growers). The following findings are also consistent with the baseline information:

- ✓ A substantial part of maize seed is also bought in the market (9% of maize farmers). Indeed, when all seeds have been eaten, farmers use to purchase seeds from the market. Most of the time, these are not selected seeds from a specific variety.
- ✓ Rice is the crop for which seed distribution from MAF is the most frequent (6% of farmers compared to 2% for maize, peanut or sweet potatoes). Apart from Nakroma, MAF mainly distributes the variety IR-64 which is imported from Indonesia. Most of these farmers were met in Bobonaro.
- ✓ The second source of seeds for peanuts is the market (17%). This is mainly because farmers haven't saved seeds from their last harvest and prefer to simply buy a few kilos of peanuts in the markets at the time of planting. Apart from Utamua, not much peanut seed distribution from MAF is happening.
- ✓ Cassava and sweet potato are the varieties for which sourcing cuttings from a relative/neighbor/friend is most common: 6 and 7% of cassava and sweet potato farmers. Apparently, farmers are more eager to share cuttings than maize, peanut or rice seeds, maybe because seeds are also food that can be stored in case of food-shortage. This is very interesting when related to how SoL3 can disseminate

Ai-Luka and Hohrae across the country. If local multiplication centers are organized at suco level, it might be that many surrounding farmers will very quickly "grab" a few cuttings and progressively spread the variety to the whole suco.

#### Area

Rice is the crop which is generally grown on larger areas (up to 20.3ha in this sample). All the other crops are grown on less than half a hectare, for non-SoL varieties. Also, it is interesting to note that among non adopters, a smaller proportion of farmers grow two cycles per year, which could mean that farmers intend to intensify their production by growing more cycles per year once they have adopted a MAF/SoL variety.

	Average area grown (ha)	Maximum area grown (ha)	% of farmers growing two cycles per year
Maize non-SoL varieties	0.44	5	11%
Rice non-SoL varieties	0.96	20.3	3%
Peanut non-SoL varieties	0.18	2	5%
Cassava non-SoL varieties	0.40	3	0%
Sweet potato non-SoL varieties	0.39	3.66	1%

Table 23. Area of non-SoL varieties grown

[640, 250, 190, 575 and 378 farmers planting maize, rice, peanut, cassava and sweet potato answered these questions]

#### 2.5 Participation in Groups

#### 2.5.1 Diversity of groups

Respondents were also asked about their involvement in different types of groups (both social and agricultural). More than half of respondents are members of two or three different groups (Table 24). This finding is very different from the baseline where 57% of the households said they were members of one group only. This is mainly because in the baseline survey, the question was asked in an open manner ("In which types of groups are you involved?") and the enumerator would list farmer's answers; while in the MTS, enumerators had to read each type of group one by one and ask respondents if they were members of it or not. In the end, it is very likely that the baseline is slightly underestimating the proportion of farmers being member of each group while it is overestimated in the MTS.

	Table 2	Table 24. Participation in Groups									
	Number o	Number of groups in which the respondent or other household members participate									
	One	Two	Three	Four	Five or more						
MTS	22%	34%	25%	14%	5%						
Baseline	57%	27%	12%	3%	0.9%						

Table 24. Participation in Groups

[Results among 671 farmers]

Table 25 shows that 30% of the respondents were members of agricultural groups and 14% were members of seed production groups. Note that seed production groups are not necessarily the CSPGs facilitated by MAF/SoL. Among households which are members of these groups, more than 60% mentioned women were members (most of the time, along with other male family members). Groups involving more women are generally saving and loan groups (one of the less common type of groups).

The proportion of households reporting being member of social groups such as "adat and religious groups" seems overestimated. Indeed, respondents sometimes felt embarrassed to say they were not members of such groups and would rather say they were members of these groups than say the truth.

Type of group	% amoi survey	ng total sample	Bas % corres group, b of resp	eline o of ponding oy gender oondent	MTS % of corresponding group, by gender of household members included in the group			
	Baseline	MTS	Male	Female	Male	Female	Male & Female	No answer
Farmer groups	13%	30%	76%	24%	34%	14%	51%	1%
Seed production group	-	14%	-	-	37%	15%	47%	1%
Adat	10%	69%	81%	19%	18%	6%	76%	
Religious group	5%	60%	72%	28%	11%	16%	73%	
Youth group	2%	40%	89%	11%	35%	17%	48%	
Savings & loans groups	2%	10%	63%	37%	20%	36%	39%	6%
Other	0.6%	1%	82%	18%	25%	25%	50%	

Table 25. Type of Groups in which Respondents and other Household Members participate

[600, 617, 631, 622, 605, 579 and 573 farmers answered respectively questions about each category of groups listed in the table]

The following chart shows the familiarity of farmers who are members of agricultural groups with MAF/SoL varieties.





Figure 17. Correlation: agriculture groups / familiarity with MAF/SoL varieties

In general, being a member of an agricultural group or a seed production groups increases the chances that farmers are familiar with MAF/SoL varieties. This is very obvious when looking at seed production groups in particular. Also, the 21% farmers who are members of seed production groups but do not know any of MAF/SoL varieties are probably members groups facilitated by other INGOs.

#### 2.5.2 Seed production groups

Farmers were asked if they knew about the existence of a seed production group in their suco producing MAF/SoL varieties. 25% of the respondents said they knew about such groups. Note that 49% of these farmers do not live in a suco with existing MAF/SoL CSPGs. The groups they are mentioning are probably one of those facilitated by CARE, Mercy Corps, HIVOS or World Vision which are also producing MAF/SoL varieties.

Among the 147 respondents who knew about the existence of a seed production group in their suco, 31 (21%) said the group was selling seeds, while another 38% weren't sure. Farmers mentioned the groups were selling Sele (20 cases), Nakroma (20 cases), Noi-Mutin (6 cases), Utamua (8 cases), Hohrae (1 case).

82% of farmers who know about the existence of a seed production group are also familiar with one or more MAF/SoL varieties even though they do not grow it. Among farmers who do not know about a seed production group in their suco, only 43% are familiar with MAF/SoL varieties. This finding confirms that establishing a broad network of CSPGs across the country will help familiarizing farmers with these improved varieties, which is a first step to adoption.

#### 2.6 Familiarity with MAF/SoL varieties

#### 2.6.1 Familiarity with each variety

Each respondent was asked whether s/he had heard about the MAF/SoL varieties s/he wasn't growing. All together, 53% of all respondents knew about at least one MAF/SoL variety. Sele and Nakroma are the most well-known varieties (about a quarter of non variety-adopters). Ai-Luka and Hohrae are the less known varieties and might benefit from a "promotional campaign". Surprisingly, Noi-Mutin which is the most recent released variety (2001) is already familiar to 16% of respondents who do not grow this variety.

During the baseline survey, only 11% of respondents said they had heard of the SoL program (no question was asked about specific varieties). It is very encouraging to see that farmers are more aware of the varieties than of the program.

The main source of information is MAF, mainly through SEOs. The second source of information is media such as TV and radio (harvest ceremonies are sometimes broadcasted on the "Tele Jornal" of TVTL): 10% of all respondents mentioned TV or radio for at least one MAF/SoL variety. Radio or TV might be useful channels for SoL to promote the latest or less known varieties.

		From where do you know about the variety?									
	Heard about the varietv	( MAF	% among NGO	g farmers	Media Radio TV Relatives						
Sele	27%	47%	12%	29%	15 cases	30 cases	11%	1%			
Noi-Mutin	16%	58%	12%	22%	5 cases	17 cases	7%	1%			
Nakroma	23%	51%	10%	19%	10 cases	17 cases	19%	1%			
Utamua	14%	59%	14%	13%	3 cases	9 cases	11%	3%			
Ai-Luka	11%	61%	13%	16%	8 cases	4 cases	7%	3%			
Hohrae	9%	61%	12%	14%	4 cases	4 cases	11%	2%			

Table 26. Familiarity with each MAF/SoL variety

[577, 656, 631, 648, 656, 643 farmers who do not grow respectively Sele, Noi Mutin, Nakroma, Utamua, Ai-Luka or Hohrae, answered this question]

The following chart shows how many varieties farmers who were asked the questions know about. The majority of farmers know about one, two or three varieties (mainly Sele, Nakroma and Utamua). Only 20% are familiar with more than three different varieties.



[Percentages among 352 farmers who are familiar w least 1 MAF/SoL variety ]

Figure 18. Number of MAF/SoL varieties farmers are familiar with.

Farmers were also asked if they would be ready to pay to get seeds from these varieties. On average, more than 80% of farmers declared they would be ready to pay. Utamua is the variety for which a smaller proportion of farmers would be ready to pay: 72%. However, given that less than 15% of farmers said they bought seeds to plant during the last cropping cycle, it is very likely that many farmers saying they would be ready to pay a fee to access MAF/SoL variety seeds wouldn't actually do it. The widespread free-distribution system maintained by various stakeholders isn't helping to change this situation.

Finally, if farmer knew of a MAF/SoL variety but didn't plant it, the respondent was asked why he wasn't growing it. Overall, 90% of farmers who answered this question said they didn't grow the MAF/SoL variety because they do not have seeds or cuttings. Only 25 farmers said they do not want to grow the MAF/SoL variety because it isn't adapted to their local climate or soil conditions (too cold temperature in Aitutu-Ainaro for example). Other reasons were post-harvest losses, low production or not having money to buy seeds.

Overall, this is very encouraging as it shows that there isn't any major barrier to adoption of MAF/SoL varieties despite the fact that most farmers still can not access seeds/cuttings. SoL's strategy of organizing CSPGs at suco level to facilitate access to quality seeds/cuttings is therefore very relevant to farmers' needs.

#### 2.6.2 Factors influencing familiarity with MAF/SoL varieties

#### **Participation in groups**

As mentioned in the previous chapter, participation in agricultural groups increases familiarity with MAF/SoL varieties. Also, knowing of a seed production group, whether it is a CSPG organized by MAF/SoL or another seed production group also positively influences familiarity with MAF/SoL varieties.

#### Total food crop area grown

The bigger the area, the more MAF/SoL varieties farmers are aware of: farmers growing 1.2 ha on average know about five MAF/SoL varieties while people growing less than a hectare know only one or two varieties. Also, among farmers who aren't familiar with any MAF/SoL variety, the average area of food crop grown is 0.68ha. In general, respondents with larger farming areas are well-off farmers with more access to information.

#### Region

61% of farmers living in Seeds of Life's Program first target districts (Aileu, Liquica, Manufahi, Baucau) are familiar with one or more MAF/SoL varieties, while it is only 49% in other districts where SoL3 has been working with two years or less.

#### 2.7 Food Security

#### 2.7.1 Period of food shortage

Questions about food security were structured in order to compare farmer's perception of "hungry season" and the actual periods when food is insufficient.

#### Perception of "Hungry Season"

Farmers were first asked the following question: "Did your household experience one – or more – "hungry seasons" during the last 12 months (June 2012-May 2013)?". 84% of respondents answered "Yes" to this question.

Then farmers were asked during which months they had expedience this "hungry season".



Figure 19. Reported hungry season.

As shown in Figure 19, the main hungry season is the period from November to February, that is to say about eight months after most farmers have harvested maize. During this period, most farmers are running down of the food-crops they harvested the previous year (harvests on average from March to July).

#### **Food shortage**

This information was collected by asking to farmers during which months they could consume each of the food-crop they were self producing. The charts on the following page present the result of these questions. Overall, the patterns are very similar to those of the baseline survey.

From this data, the total number of months during which no self-grown food crop is available for consumption has been calculated. On average, farmers experience 2.7 months of actual food shortage. If months when farmers have no self-grown food crops to eat but have reported buying rice are deducted, this average comes down to 0.23 months. Indeed, as shown later on, a majority of farmers buy rice, especially during period of food shortage.



Figure 21 shows the proportion of farmers experiencing different levels of foodshortage<sup>15</sup>. Note that 38% farmers never experience food shortage while only 16% reported not suffering from any hungry season. Only 6% of farmers experience more than six months of food shortage. These are mainly farmers growing a smaller number of varieties.

<sup>&</sup>lt;sup>15</sup> Food shortage is defined as a period when households have none of the following self-grown food crops to consume: maize, rice, peanut, cassava or sweet potato.



Figure 21. Categories of food-shortage periods.

#### BOX 3: Analysis to compare baseline data and MTS data

In the baseline survey, the plausibility of data on food consumption was questioned because of the abnormal results on the percentage of farmers reporting consuming a self-grown food crop all year round: the proportion of such farmers was much too high and didn't follow the general pattern of annual food consumption. A similar analysis is presented here to assess the accuracy of the MTS data.



It appears that the same problem happened for rice and cassava. This is indeed to be questioned but mainly relies on the fact that farmers growing large areas of rice or cassava have a lot of food available and would rather not bother explaining to the enumerator during which months they consume or not such food. As a result, more farmers report "I can eat this crop all year round" while they are actually eating it only during 10 or 11 months.

It is very likely that the proportion of farmers reporting 12 months of consumption is slightly overestimated, while the proportion of farmers reporting 10 or 11 months consumption is underestimated.

In conclusion, the data collected in the MTS will still be used and considered relevant because on average the overestimated proportions of farmers reporting consuming rice and cassava for 12 months with the slightly underestimated proportion of farmers reporting consuming rice and cassava for 10-11 months will compensate itself. However, this data won't be compared to baseline data.

As shown in Figure 22, overall, farmers report more months during which they experience hungry season than the months when they actually have no more self-grown food crops for consumption, especially from November to January.



Figure 22. Comparison food shortage vs. hungry season

#### 2.7.2 Correlation between food shortage and other factors

#### Adoption

Among adopters, a higher percentage of farmers do not experience food shortage (42%) than among non-adopters (36%), which could mean that adoption of MAF/SoL varieties reduces the risks of the family experiencing food shortage. Also, on average, adopters experience about two weeks less food shortage than non-adopters: 2.4 months vs. 2.8 months.

#### Districts

In districts where SoL has worked the longest (Baucau, Liquica, Aileu and Manufahi), the average food shortage period is less than in other districts where SoL has been working only in the recent years: 2.3 months vs. 2.7 months.

#### 2.7.3 Coping strategies

To cope with periods of food shortage, farmers have several coping strategies. Figure 23 reflects how many farmers use each of these coping strategies. Buying rice is very common (94% of respondents, similar to baseline) and is progressively replacing maize as the main staple food crop. Most farmers mentioned they, and especially their young children, prefer eating rice even though the family plants maize.

Also, 86% of baseline respondents said they consumed wild food against only 45% in the MTS.



[Percentages among 659 to 672 farmers answering for each type of coping strategy]

Figure 23. Proportion of farmers using each type of coping strategy.

The other self-grown crops that farmers reported eating are first root crops (taro, "kontas", "kumbili") for 33% of respondents, then vegetables and fruits such a water convolvulus, mustard or banana and papaya (14% and 13% respectively). Finally beans were reported by 4% of farmers (red beans, mung beans, "tunis", long beans, soya beans).

Among purchased food, instant noodles were reported by 27% of respondents while vegetables were mentioned by 6% only. Very few respondents also purchased fruits, canned fish, root crops, etc.

#### 2.7.4 Purchase of Rice in the Last Year

The respondents were asked in which months of the previous year they had bought rice for food, and how much. The data collected was quite similar to the baseline data:

- 65% of respondents purchased rice in all previous 12 months (62% in the baseline survey).
- The remaining 35% of respondents purchased rice mainly from November to February, during the main period of food shortage (September to February in the baseline survey).
- The average quantity of rice purchased per farmer is 378 kg (about 32kg per month compared to 39 kg per month in the baseline).

85% of rice farmers who also buy rice said they bought rice because their own production is not enough, 7% said their crop failed and another 4% said buying rice was easier than having to mill padi.

#### 2.8 Agricultural Extension

Suco Extension Workers (SEOs) are key actors of SoL3's CSPG development program. Therefore, the last section of the questionnaire was dedicated to farmers' relation with SEOs and the results mainly show that the impact of SEOs seems to have significantly increased since the baseline survey: higher proportion of farmers know their SEOs and have received services from them (especially seed distribution and training).

#### 2.8.1 Knowing the SEO

A total of 61% of respondents declared they knew the extension worker in their suco, which is much more than what was reported in the baseline (43%). The MTS questionnaire also asked if another member in the family knew the SEO, which brings up the proportion of households knowing their SEO to 66%.

However, it is important to note that 28% of farmers who know the SEO said they never talked to him. Another 55% said they talked to the SEO a few times and only 17% know the SEO very well and "talk to him every day".

As expected, men are the main ones to know the SEO: 67% of respondents who know the SEO are male (similar as baseline survey findings).

#### 2.8.2 Rating of SEO services

According to the following chart, the rating of SEOs by farmers is quite similar than the one of the baseline, even though a slightly lower percentage of farmers seem to be satisfied with SEOs services today compared to 2011.



Figure 24. Rating of SEOs by respondents

#### 2.8.3 Type of services received from SEO

The most frequent services delivered by SEOs are visits to farmers. A very high percentage of farmers also received seeds and joined trainings in the last six months (61% and 48% respectively). These proportions are much higher than the data collected during the baseline survey which shows that MAF has been implementing a lot of

activities from January to June 2013. If measured among the total sample, 31% of respondents received seeds in this period.



Figure 25. Type of Extension Services received in the past Six Months



Participants were asked to share 100 grains of maize between the different varieties grown in the suco, proportionally to how much they believed was each variety grown in their suco.

Figure 26. Focus Group Discussion with local leaders to identify varieties grown in the village – Ainaro -

#### 3.1 Findings

#### 3.1.1 Number of Farmers Reached by the Seeds of Life Program

The same methodology as the one described in the baseline survey report is used here to estimate how many farmers are growing one or more MAF/SoL varieties:

- 1. In mid-2010, based on the national census, the "total number of private households (rural)" in Timor-Leste was 136,929, and the "number of households involved in crop production" was 116,426 (including coffee, coconut and other tree crop growers).
- 2. Assuming the average annual growth rate is 2% (average among estimations from UN, the World Bank and the 2004/2010 census), the number of households involved in crop production in 2013 is 123,552.

Therefore, with an adoption rate of 24.6%, an estimated <u>**30.394 households**</u> are using MAF/SoL varieties in Timor-Leste in mid-2013. This number will increase with new farmers that will start to grow MAF/SoL varieties in the 2013-2014 growing season.

This result was achieved thanks to the work of MAF and several INGOs engaged in the dissemination of MAF/SoL varieties (among others: HIVOS, Care, Mercy Corps, World Vision, Concern). Another survey is being conducted to estimate how much seeds/cuttings have actually been distributed by MAF and INGOs and where they were distributed.

The MTS also captured a significant proportion of farmer to farmer dissemination: from OFDTs, MAF staff growing seeds themselves and distributing to relatives, staff of research stations giving away seeds/cuttings, etc.

As mentioned in this report, it is still too early to measure the impact of CSPGs in disseminating seeds outside the group because most of them have only disseminated the seeds among their group members during the last cropping cycle (end 2012). More impact is expected in 2014.

#### 3.1.2 Reduction in Experience of Food Shortage

SoL3's logframe mentions the "*Percentage of crop-producing households experiencing periods of food shortage decreased by 33% in Timor-Leste*". Therefore, the baseline survey and MTS questioned the farmer about availability of self-grown food crops for consumption.

**62%** of households surveyed experience food shortage from their own food crop production during at least one month. On average, farmers do not have self-grown food crops during **2.7 months**. However, the MTS also revealed that most farmers buy rice during these months, which brings down the proportion of households experiencing food-shortage to 9% and the period when no self-grown food crops or purchased rice is

available for consumption to 0.23 months. The comparative data for the baseline survey is not available, because much of the reported data on the availability of self-grown crops in the baseline was deemed unreliable. This shortcoming in the baseline data was therefore specifically addressed in the MTS.

In order to make objective comparisons of the decrease in percentage of farmers affected by food shortage, an Objectively Verifiable Indicator should be selected. The soundest option would be "Percentage of crop-producing households reporting no self-grown food crop<sup>16</sup> available for consumption during one month or more decreased by 33%". Another option could be "Average number of months when self-grown food crops are unavailable for household consumption decreased by 33% (crop producing households only)".

Also, it should be noted that a large majority of these households are not suffering from severe food-insecurity as they adopt several coping strategies, the first one being purchasing rice. If no cash is available from other income generating activities or cash crops, farmers also collect wild foods.

#### 3.1.3 Perception of increased productivity

The second indicator at the purpose level in the M&E framework, states that "90% of crop producing households adopting MAF/SoL released varieties reporting increased yields". Overall, in the MTS, 88% of farmers reported an increase productivity which is very similar to the result of the baseline survey (87.5%). This simply proves that since the beginning of SoL3, farmers have a very good perception of MAF/SoL varieties. The End of Program target has nearly been reached.

#### 3.2 Learnings and Recommendations

#### 3.2.1 Increasing access to MAF/SoL varieties

According to the MTS, 90% of farmers who were familiar with a MAF/SoL variety but didn't grow it declared they didn't plant it because they didn't have seeds or cuttings. Therefore, increasing access to seeds and cuttings is a priority.

An obvious example is Hohrae which is very much appreciated by adopters:

- Perception of increased productivity: +72%,
- 100% of Hohrae farmers want to continue growing Hohrae, among which 55% would like to increase the area,
- Only 38% plan to grow it along with a local variety.

However, only 7% of sweet-potato farmers plant Hohrae, simply because of a limited access to cuttings.

<sup>&</sup>lt;sup>16</sup> Self-grown food crops should be limited to those for which SoL is having an impact: maize, rice, peanut, cassava and sweet-potato.

Several strategies are to be reinforced:

- Drive the dissemination of seeds and cuttings from CSPGs by carefully monitoring their activities and the implementation of the "seed revolving scheme" (sharing 5Kg of seeds with another farmer group if the CSPG has reached a good production level). The GPS location of each CSPG should be taken to enable a better tracking and monitoring of the groups, and ensure their good geographical distribution in the production areas all over the country.
- Organize "field days" where farmers outside the CSPG would be invited to see the results of a CSPG (harvest ceremony for example). A small quantity of seeds could be shared with each farmer attending a field day.
- If a fast-track distribution of Ai-luka and Hohrae across the country is to be repeated, it is important to carefully monitor the distribution (time between cutting and transplanting, transport conditions and storage if any). The best option would be to have more multiplication centres around the country where farmers could easily access cuttings from (CSPGs or OFDTs for example). This is already planned.
- Support MAF and partner organizations in better targeting beneficiaries of MAF/SoL seeds and cuttings distributions as well as better organized distributions (especially related to timing). Many cases of late distributions have been reported during the MTS and result in a reduced impact of these distributions (less adoption).
- The MTS revealed that farmers living in isolated aldeias or who are not members of groups have less access to MAF/SoL varieties. Therefore, it is also important to try reaching those more vulnerable households. SoL3 has piloted a vulnerable-targeted distribution in Maumeta in February 2013 using a Seed Voucher system.

#### 3.2.2 Strengthening the work of SEOs

SEOs are the main sources of information of farmers as well as key actors to ensure CSPGs sustainability. Therefore, good management and support of SEO's work is crucial to ensure success of CSPGs.

The MTS also revealed that several messages regarding specificities of MAF/SoL varieties would need to be disseminated through SEOs:

- How to select and store maize seeds,
- How to increase germination of Utamua,
- Differences in minimum germination rates tolerated for peanuts vs. other varieties (70% vs. 90% for maize).

For maize, SoL3 is already working towards this direction by partnering with IFAD's program of drum distribution for maize storage.

Finally, efforts are needed to better target women (only 33% of farmers who reported knowing SEOs were women).

#### 3.2.3 Communication

The MTS revealed a number of areas where communication campaigns might help improving SoL's performances:

- Hohrae and Ai-Luka are known by only 11% and 9% of crop farmers<sup>17</sup> respectively. Clearly awareness is needed for these two varieties. A first step would be to label the cuttings when they are distributed. Also, familiarity with those varieties will definitely increase when access is also increased.
- After MAF, TV and radio are the second source of information of non-adopters (mainly harvest ceremonies broadcasted on TVTL's "Tele Jornal"). Therefore, it might be interesting to involve those media more often when MAF/SoL is organizing events (theatre, launching of farmer associations, fast-track cutting distributions, etc). This could be the opportunity to also include messages on seed selection and storage.
- Awareness raising on MAF/SoL varieties' names is important in order not to "loose track" of these varieties. Creating a brand around the varieties names using slogans, pictures, specific colors could help in this process, especially for illiterate farmers.
- Initiatives such as the creation of the short manual on "Improved Practices for Maize" are to be multiplied. Materials from other organizations already exist and could also be distributed to CSPGs or during field days.

#### 3.2.4 Future adoption surveys

Some lessons learned from the implementation of the MTS are to be taken in consideration for future adoption surveys:

- If an annual survey is planned, a very simple format (maximum two pages) could be developed based on the MTS and baseline questionnaire. Information collected would focus on the varieties grown at the time of the survey, were MAF/SoL varieties grown the previous year and does the farmer plan to grow them again the coming year. Such survey could be implemented using tablets.
- Training of enumerators should include at least three days in the field, focusing on how to identify MAF/SoL varieties. Enumerators should be trained by skilled MAF/SoL staff who are able to identify varieties. Visits to a research station, OFDTs as well as random farmers would be useful to see a wide range of varieties (MAF/SoL varieties, other improved varieties and local varieties). A test in which trainees would have to identify varieties of the five food crops could be organized at the end of the training to select the best candidates as survey enumerators.
- Definitely, the final survey needs to include questions about whether the respondent was growing MAF/SoL varieties in the last two years and why they stopped/continued (substitution strategy), have they expanded the area grown, what was their experience with the varieties' performances, etc.

<sup>&</sup>lt;sup>17</sup> Percentage calculated among non-variety adopters only.

- Future surveys should preferably be implemented in August in order to capture the productions of rice growers who mainly harvest in June-July.

Also, a reflection meeting was organized at the end of the MTS to brainstorm with enumerators about successes and problems faced during the MTS. Here are some of the main outcomes which can be useful for future surveys:

- Preparation of fieldwork: Even though the Ministry of State Administration was asked to inform local leaders of all samples sucos about the survey three weeks in advance, it would have been useful to also follow-up this process by contacting directly all Chefe Sucos. Indeed, for the MTS, less than 10% of the sucos local leaders declared they had received the informative letter from the Ministry of State Administration.
- The same length of time should be given for MAF District Directors to inform their SEOs about the survey. For the MTS, an informative letter with the list of target sucos was given to each MAF District Directors one week prior to fieldwork, but this might not have been enough.
- The most difficult section of the questionnaire was Part 5, about the characteristics of each food crop grown. In particular, enumerators had difficulties estimating farmer's production (especially for cassava and sweet potato) and the quantity of seeds/cuttings planted, understanding farmer's plot patterns. In future surveys, such details might be asked only for MAF/SoL varieties in order to simplify the questionnaire.
- Part 7 of the questionnaire regarding participation in groups was also difficult to understand for enumerators. To simplify this section, it is proposed that in the final survey, only participation in agriculture-related groups is asked.



Figure 27. Interview of a farmer in Los Palos.

# Appendix I: Sampled sucos and aldeias

District	Sub-district	Suco	Aldeia
Aileu	Aileu Vila	Aisirimou	1 Aiturilaran, 2 Besilau
		Lahae	1 Lahae, 2 Riatelo
	Laulara	Cotolau	1 Binona, 2 Ramerlau
Ainaro	Maubisse	Aitutu	1 Goulolo, 2 Russulau
		Fatu-Besi	1 Raibutilau, 2 Titibauria
	Hato Udo	Foho Ai-Lico	1 Ailora, 2 Lebumera
Baucau	Baucau	Triloca	1 Lequiloiuatu, 2 Macadai
	Laga	Sagadati	1 Samagata, 2 Ulabuti
	Quelicai	Laco Liu	1 Lacodala, 2 Waule
		Abafala	1 Assaluqui, 2 Mumana
	Baguia	Defawasi	1. Warou, 2. Saemata
		Lavateri	1 Fanalolo, 2 Osso-Issalari
	Venilale	Uaiolo	1 Aca Uatu, 2 Luli Uatu
Bobonaro	Maliana	Raifun	1 Raifun Foho, 2 Raifun Vila
		Tapo/Memo	1 Lep Guen, 2 Pip Galag 1
	Cailaco	Goulolo	1. Sori Ubu (only 1 aldeia)
	Lolotoe	Atabae	1 Lolocolo, 2 Saburapo
	Bobonaro	Male-Ubu	1 Lica-Ubu, 2 Mali-Ubu
		llat-Laun	1 Ilat-Laun, 2 Purugoa
Covalima	Fatululic	Taroman	1 Holba, 2 Macous
	Suai	Suai Loro	1 Acar Laran, 2 Sucabe Laran
		Labarai	1 Bonuc, 2 Roec
	Tilomar	Casabauc	1 Cawa Uman, 2 Coloama
Dili	Vera Cruz	Dare	1 Leilaus, 2 Suca Lau
	Atauro	Beloi	1 Ucu Bemacu, 2 Arlo
		Biceli	1 Ilicnamo, 2 Pala
Ermera	Railaco	Railaco Craic	1 Fatucado, 2 Cuccoa
	Ermera	Mirtutu	1 Rai-Lori, 2 Tata Bauria
	Letefoho	Eraulo	1 Darudo, 2 Lequisala
	Atsabe	Baboi Craic	1 Lauabi, 2 Raebuti
		Atadame/Malabe	1 Batumigi, 2 Malabe
		Baboi Leten	1 Liabe, 2 Coilequi
	Hatolia	Aileto	1 Santacruz, 2 Tata
Liquiça	Bazartete	Motaulun	1 Classo, 2 Mau-Luto
	Liquiça	Leotela	1 Hatumasi, 2 Manati
	Maubara	Vatuvou	1 Samanaro, 2 Vatu-Nau
		Vaviquinia	1 Darulara, 2 Pametapu
Manatuto	Laclo	Lacomesac	1 Nacaleo, 2 Tahagamu
	Soibada	Fatumacerec	1 Lesuata, 2 Sasahi

District	Sub-district	Suco	Aldeia
Lautem	Lospalos	Bauro	1 Bauro, 2 Iralafai
	Lautem	Baduro	1 Irapala, 2 Luadau
		Daudere	1 Macalodo, 2 Nasuloi
	Tutuala	Tutuala	1 Pitileti, 2 Vero
Manufahi	Alas	Aituha	1 Leodato, 2 Raicesa
	Turiscai	Beremana	1 Dalubo, 2 Fahilebo
Oecusse	Pante Makasar	Nipani	1 Bausiu, 2 Sacato
		Cunha	1 Maunaben, 2 Noafafo
	Nitibe	Usi-Taco	1 Fatunababo, 2 Nitibe
		Lela-Ufe	1 Cuat Ennes, 2 Mahata
	Passabe	Abani	1 Haem-Nanu, 2 Naetuna
Viqueque	Uatucarbau	Irabin De Baixo	1 Taradai, 2 Taradiga
		Loi Ulu	1 Bulale, 2 Liabuta
	Watulari	Matahoi	1 Calohan/Uatulo, 2 Uasufa
	Viqueque	Bahalara Uain	1 Caninuc, 2 Welaco
	Lacluta	Dilor	1 Boruc, 2 Rade Uman

## **Appendix II: MTS Questionnaire**



The Democratic Republic of Timor-Leste Ministry of Agriculture and Fisheries

> Seeds of Life Fini ba Moris



## Mid-Term Survey Seeds of Life 3

June - July 2013

#### Informed Consent

For this survey I would like to talk to one or more adult members of the household, including – if possible – the head of household. I want to ask some questions about food-crop production. This information will help the government to assess if its seeds program for farmers is effective.

The survey usually takes about 30 minutes to complete. The information you provide will not be shared with other persons in a way that can identify you. Participation is voluntary and you can choose not to take part in it. However, we hope that you will participate in this survey since your views are important.

At this time, do you want to ask me anything about the survey? May I begin the interview now?

#### Information on the Household's Involvement in Foodcrop Agriculture Activities

Because this survey is to obtain information on foodcrops, we would first like to ask if you or your household grow any of the following crops in your farm during the last year's cropping and harvesting season (June 2012 – May 2013)?

	Yes	No	
Maize (MAI)	1	0	
Rice (RIC)	1	0	
Peanuts (PEA)	1	0	
Cassava (CAS)	1	0	
Sweet Potato (SWE)	1	0	

Part 1. Unique Questionnaire Number							
District (DIS):							
Sub-District:		-					
Suco:							
Aldeia:							
Respondent nb:							

If all answers are no, thank the respondent and end the interview.

Part 2. Enumerator and data entry staff										
	Enumerator (INT)	Quality control (QC)	First data entry (DE1)	2 <sup>nd</sup> data entry (DE2)						
Name										
Date	/ / 2013	/ / 2013	/ / 2013	/ / 2013						
Signature										

Part 3. In	formation on farm household				
3.1 NAMR	Name of Respondent				
3.2 AGER	Age of Respondent				
3.3 SEXR	Gender of Respondent	Mal Fer	e1 nale2	lf of 3.	respondent is head household, skip to 7
3.4 NAMHH	Name of Head of household				
3.5 AGEHH	Age of Head of Household	_			
3.6 SEXHH	Gender of Head of Household	Mal Fen	e1 nale2		
3.7 MAR	Marital status of the Head of Household	Mai Wic Div Nev	rried 1 lowed 2 orced / Separated 3 /er Married 4		
3.8 MEM	How many household members (inclu the respondent) do you have as of too	iding day?			

#### Part 4. Lands used during the last year (June 2012 – May 2013)

How many land parcels did your household use to grow foodcrops in the past 12 months (June 2012-May 2013) ? What is the size of each of these parcels?

	Area estimat	Crops grown (mark: X)							
No.	m*m	HA (_HA)	Maize (_M)	Rice (_E)	Rice Peanut (_E) (_P)		Cassava Sweet-potato (_C) (_S)		
1									
2									
3									
4									
5									

C1: Varieties

### Part 5. Crop characteristics (June 2012 – May 2013)

1. Batar bo'ot lokál

2. Batar lais lokál

Batar fals fokal
 Sele (MAF/SoL)
 Noi Mutin (MAF/SoL)
 Other

999. Don't know

 From last
 Free from
 Free from
 Free from
 Free from
 Free from
 Bought in
 Bought fit
 Bought fit 8. Other 999. Don't kn

1. Number of seasons grown (MCY): \_\_\_\_ seasons

5.1 MAIZE

2. For each season, how many varieties do you grow?

Write down the planting month in the first vertical column Write down the name of the varieties in the first column

	Variety	Source of seed	Qı	iantity of sedes i	used (pill	ed)			Area			Irigated		
	MVAR	MS	MSI	N	Ν	/SQ		M P			MHA		MHAR	
SON	[C1]	[C2]	Nb of	Farmers' estin	nation	Total	Plot nh	Type of plantation	Planting	Estimated	ha	Yes/No		
SEA	pictures, sample	Choose 1 only	hole	Local measurement	Quan- tity	kg	T IOCTID.		distance	m * m	па			L meas
				Bote:kg								Yes1	Harvested1	Bundle v
				Plastic:kg				Monocropping1 Row intercroping2	cm *cm	m *m		NO0	harvested2	Drum: _
 ;;				Other1:kg				Mixed intercropping3				→	(stop) Harvest lost3	Rice sad
И1М				Other2:kg									(stop)	Other: _
th (I				Bote:kg				Monocropping1				Yes1	Harvested1	Bundle v
mon				Plastic:kg					cm *cmm	m *m	→	•	harvested2 (stop) Harvest lost3	Drum: _
ing				Other1:kg				Mixed intercropping3				→		Rice sad
lant				Other2:kg									(stop)	Other: _
ON 2 : F				Bote:kg				Monocropping1 Row intercroping2 Mixed intercropping3				Yes1	Harvested1	Bundle v
				Plastic:kg					➡cm *cm	m *m		•	harvested2	Drum: _
EAS				Other1:kg								•	( <i>Stop)</i> Harvest lost3	Rice sad
SE				Other2:kg									(stop)	Other: _
				Bote:kg								Yes1	Harvested1	Bundle v
				Plastic:kg				Monocropping1 Row intercroping2	cm *cm  m *r	m *m		-	harvested2	Drum: _
:(				Other1:kg				Mixed intercropping3				•	( <i>Stop)</i> Harvest lost3	Rice sad
M2N				Other2:kg									(stop)	Other: _
th (I				Bote:kg								Yes1	Harvested1	Bundle v
mon				Plastic:kg				Monocropping1 Row intercroping2	➡cm *cm	m *m		-	harvested2	Drum: _
ting				Other1:kg				Mixed intercropping3				•	( <i>Stop)</i> Harvest lost3	Rice sad
lant				Other2:kg									(stop)	Other: _
 Т				Bote:kg								Yes1	Harvested1	Bundle v
N				Plastic:kg				Monocropping1 Row intercroping 2	cm *cm	m *m		NUU	Not yet harvested2 Dru	Drum: _
:ASC				Other1:kg				Mixed intercropping3			→	(stop) Harvest lost3		
SE				Other2:kg									(stop)	Other: _

C2: Sources of seeds											
1.	1. From last harvest										
2. 3.	Free from government										
4. 5.	Free from family/neig Bought in market	nbor									
6.	Bought in CSPG										
7. 8.	Other	eignbor									
999	. Don't know										
Production						Productivity of MAF/SoL					
MPI				PRN	varieties MPRY						
119	Farmer's estimation			Total ka	<ol> <li>Use scale</li> <li>If not clear, use</li> </ol>						
us	Local measurement	Quan- tity	Pilled (X)		nai ng	bottle					
1	Bundle w/cobs										
2	Drum:L										
.3	Rice sac:kg										
	Other:kg										
1	Bundle w/cobs										
2	Drum:L										
.3	Rice sac:kg										
	Other:kg										
1	Bundle w/cobs										
2	Drum:L										
.3	Rice sac:kg										
	Other:kg										
1	Bundle w/cobs										
2	Drum:L										
.3	Rice sac:kg										
	Other:kg										
1	Bundle w/cobs										
2	Drum:L										
.3	Rice sac:kg										
	Other:kg										
1	Bundle w/cobs										
2	Drum:L										
.3	Rice sac:kg	1									
	Other:kg										
<b>5.2</b> F	RICE	asons grow	m (RCY):	seasons	Write d	own th	e planting mont	h in the fi	irst vertical	column )	C1: Variety         C           1. IR 64         2.           2. Membramo         3.           3. Nakroma (MAF/SoL)         3.           4. Other         4.
-----------------	---------------------------------	--------------------------	---	-----------------------	------------	-------------	----------------------------------	-------------	------------------	---	--
2. F	or each sea	son, how ma	any varieties do	you grow?	Write	down t	he name of the	varieties	in the first	column	999. Don't know 6
	Variety RVAR	Source of seed RS	Quantit	y of seeds use	ed RSQ		Area	RHA	Irigation RIR	RHAR	Production 9 Padi, not rice
Season	[C1] Use pictures /sample	[C2] Choose 1 only	Farmer's es Local meausrement	stimation Quantity	– Total kg	Plot nb.	Area estimation area m * m	ha	Yes/No	Harvest status	Farmer's estimation
1M):			Can:g Sac:kg Bote:kg Other: kg		-		m *m		Yes1 No0	Harvested1 Not yet harvested2 (stop) Harvest lost3 (stop)	Ka'ut (sac/ka'ut):      kg         Drum:      L         Rice sac:      kg         Other:      kg
anting month (M			Can:g Sac:kg Bote:kg Other:kg		-		m *m		Yes1 No0	Harvested1 Not yet harvested2 ( <i>stop</i> ) Harvest lost3 ( <i>stop</i> )	Ka'ut (sac/ka'ut):      kg         Drum:      L         Rice sac:      kg         Other:      kg
SEASON 2 : PI			Can:g Sac:kg Bote:kg Other: kg				m *m		Yes1 No0	Harvested1 Not yet harvested2 ( <i>stop</i> ) Harvest lost3 ( <i>stop</i> )	Ka'ut (sac/ka'ut):      kg         Drum:      L         Rice sac:      kg         Other:      kg
I2M):			Can:g Sac:kg Bote:kg Other:kg		-		m *m		Yes1 No0	Harvested1 Not yet harvested2 ( <i>stop</i> ) Harvest lost3 ( <i>stop</i> )	Ka'ut (sac/ka'ut):      kg         Drum:      L         Rice sac:      kg         Other:      kg
anting month (M			Can:g Sac:kg Bote:kg Other: kg				m *m		Yes1 No0	Harvested1 Not yet harvested2 (stop) Harvest lost3 (stop)	Ka'ut (sac/ka'ut):      kg         Drum:      L         Rice sac:      kg         Other:      kg
SEASON 1 : PI			Can:g Sac:kg Bote:kg Other:kg		-		m *m		Yes1 No0	Harvested1 Not yet harvested2 ( <i>stop</i> ) Harvest lost3 ( <i>stop</i> )	Ka'ut (sac/ka'ut):      kg         Drum:      L         Rice sac:      kg         Other:      kg

2:	Sources of see	ds	
•	From last harves Free from NGO Free from govern Free from family	t nment i/neighbor	
	Bought in marke Bought in CSPG Bought from fan	at hily/neighbor	
99.	Don't know		Produtivity of MAF/SoL variety
		RPRN	RPRY
		Total kg	<ol> <li>Use scale</li> <li>If not clear, use bottle</li> </ol>
	Quantity		
_			
_			
_			
_			

5.3P	EANUT											C1: Var 1. Utar 2. Loka 3. Mea 4. Mut 5. Othe 999. Don	riedade mua (MAF/SoL) al nn (local) in (local) er .'t know	<ol> <li>C2: Sources of seed</li> <li>From last harvest</li> <li>Free from NGO</li> <li>Free from govern</li> <li>Free from family</li> <li>Bought in market</li> <li>Bought in CSPG</li> </ol>		
1. N	lumber of se	easons grov	wn (PCY):	seasc	ons	🔶 Writ	te down the planting	month in the	e first vertica	al columr	n 🗋			<ol> <li>Bought from fam</li> <li>Other</li> </ol>		
2. F	or each sea	son, how m	nany varieties	do you gi	row?	W	rite down the name of	of the varieti	ies in the firs	st colum	n		L	999. Don't know		
	Variety	Source of seed	Quantity c	of seeds us	sed		/	Area			Irriga	stion	n			
	PVAR	PS		Р	SQ		PP			PHA	P	_IR	PHAR			
ASON	[C1]	[C2]	Farmer's est	imation	Total	Plot nb	Type of plantation	Planting distance	Estimated area	ha	Yes	Ves/No Hanvest status		Estim		
SE	/sample	only 1	Local meausrement	Quantity	кд			cm * cm	m * m					Medida		
			Can:g				Monocropping 1				Yes No	0 Not yet		Rice sac:		
			Sac:kg				Row intercroping2	cm *cm	m *m		•		harvested2	Ka'ut (sacs/kaut)		
			Bote:kg				Mixed intercropping3				►		Harvest lost3	Bote:		
:(W)			Other:kg								Ves	1	(StOp)	Rice sac:		
(P1			Can:g				Monocropping1		*		No	.0	Not yet	Ka'ut (sacs/kaut)		
nonth			Sac:kg				Row intercroping2	cm *cm -	m "m			harvested2 (stop)		Bote:		
ing n			Other kg				Mixed intercropping3				ľ		Harvest lost3 (stop)	Other:		
Plant			Can: q								Yes	1	Harvested1	Rice sac:		
1 2: 1			Sac: .kg				Monocropping1	cm * cm	m *m		No	.0	Not yet harvested2	Ka'ut (sacs/kaut)		
SON			Bote: kg				Row intercroping2 Mixed intercropping3						(stop)	Bote:		
SEA			Other:kg										Harvest lost3 (stop)	Other:		
			Can:g								Yes	1	Harvested1	Rice sac:		
			Sac:kg				Monocropping1	cm *cm	m *m		No	.0	Not yet harvested2	Ka'ut (sacs/kaut):		
			Bote:kg				Mixed intercropping2	-					(stop)	Bote:		
			Other:kg										(stop)	Other:		
2M):			Can:g								Yes	1	Harvested1	Rice sac:		
ith (F			Sac:kg				Monocropping1	cm *cm	m *m		No	.0	Not yet harvested2	Ka'ut (sacs/kaut):		
nom			Bote:kg				Mixed intercropping3	_			•		(stop) Harvest lost 3	Bote:		
nting			Other:kg										(stop)	Other:		
Plai			Can:g								Yes	1	Harvested1	Rice sac:		
N1:			Sac:kg				Monocropping1 Row intercroping2	cm *cm	m *m		•	.0	harvested2	Ka'ut (sacs/kaut):		
EASC			Bote:kg				Mixed intercropping3				•		(stop) Harvest lost3	Bote:		
SE			Other:kg										(stop)	Other:		

e <b>ds</b> st			
nment v/neighbor			
et 7			
nily/neighbor			
duction			Produtivity of
			MAF/SoL variety
	ł	PPRN	
nasaun agrikultor		Total ka	<ol> <li>Use scale</li> <li>If not clear, use</li> </ol>
a lokal	Kuanti- dade	, otai ng	bottle
kg			
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<b>5.40</b> How	CASSAVA         w many varieties do you grow? → Write down the name of the varieties in the first column         'ariety       Source of cuttings         Quantity of cassava cuttings used       Area         Irrigation								C1: Variety cassava 1. Ai-Fariña mantega bo 2. Ai-Fariña mantega ki' 3. Nona metan 4. Lesu 5. Ai-Fariña boraisa 6. Ai-luka 2 (SoL) 7. Ai-luka 4 (SoL) 8. Other 999. Don't know	'ot 'ik	C1: Variety sweet po 1. Lokál mutin 2. Hohrae 1 (SoL) 3. Hohrae 2 (SoL) 4. Hohrae 3 (SoL) 5. Other 999. Don't know		eet po bL) bL) bL)	C2: Sources of seeds <ol> <li>From last harvest</li> <li>Free from NGO</li> <li>Free from government</li> <li>Free from family/neighbo</li> <li>Bought in market</li> <li>Bought in CSPG</li> <li>Bought from family/neighbo</li> <li>Other</li> <li>999. Don't know</li> </ol>		nent eighbor y/neighbo	ır				
Va C	VAR	cuttings CS	C_	Quantity of cassa _ P	va cuttir	ngs used (	CSQ		Area C	HA	tion CIR		CHAR C	1			 CPRN		PRN	Produtivity of MAF/SoL	
[ L pict san	C1] lse ures/ nples	[C2] Choose 1 only	Type of	plantation	Nb of plants	Planting distance estimation <i>cm</i> * <i>cm</i>	Total cassav a cuttings	Plot nb	Estimated area m * m	ha	Yes/No		Harvest status	Type of harvest	Nb. Of harve sts	Nb tres /harv est	Nb tuber /tree	Wei Sample (g)	ght/tuber <i>Timea</i> (x1 / x3 / ½)	Total kg	variety CPRY <i>Uza skala</i>
			Monocropping. Row intercropin Mixed intercrop	1 ng2 opping3		cm *cm –			m *m		Yes1 ►No0	Harv Not y Harv	/ested1 yet harvested2 <i>(stop)</i> /est lost3 <i>(stop)</i> )	All at once <del>1</del> Little by little2							
			Monocropping. Row intercropi Mixed intercrop	1 ng2 oping3		cm *cm –			m *m		Yes1 No0	Harv Not y Harv	vested1 yet harvested2 (stop) vest lost3 (stop))	All at once <del>4</del> Little by little2			<b>→</b>				
			Monocropping. Row intercropin Mixed intercrop	1 ng2 oping3		cm *cm –			m *m		Yes1 ►No0	Harv Not y Harv	vested1 yet harvested2 (stop) vest lost3 (stop))	All at once <del>4</del> Little by little2			-				
5.58	WEET P	ΟΤΑΤΟ								1					I			<u> </u>			
1. N	lumber o	of season	s grown (SC	SY): sease	ons -	→ Write do	own the p	olanting	month in the	e first v	ertical co	lumn	ו								
2. F	or each s	season, l	how many va	arieties do you g	row?	→ Write	down the	e name	of the variet	ies in th	ne first co	olumn	า								
z	Variety SVA	y Sour cut AR S_	rce of tting SSQ	Quantity c S P	f SP cut	tting used	S_		Area	SH	Irigat	tion _IR	S HAR	SHT	Producti	on		S	PRN	P MA	roductivity of \F/SoL variety
SEASO	[C1] Use picturres /sample	es Cho	C2] ose 1 Tj nly	/pe of plantation	Nb of plants	Planting distance estimation <i>cm</i> * <i>cm</i>	Total SP cuttings	Plot Nb.	Estimated area	ha	Yes/I	'No	Harvest status		How many times harvest	Sao /harv	c est	kg / sac	Total k	g	SPRY Use scale
S1M):			Monoc Row in Mixed	ropping1 tercroping2		•cm *cm		_	m *m		Yes	1 0	Harvested1 Not yet harvested2 (sto Harvest lost3 (stop))	(qc	Nb of times:	S	ac	kg / sad	c		
j month (			Monoc Row in Mixed	ropping1 — tercroping2 — intercropping3		•cm *cm		-	m *m		Yes	1 0	Harvested1 Not yet harvested2 (sto Harvest lost3 (stop))	(קכ	Nb of times:	S	ac	kg / sad	c		
Planting			Monoc Row in Mixed	ropping1 — tercroping2 — intercropping3		•cm *cm		_	m *m		Yes	1 0	Harvested1 Not yet harvested2 (sto Harvest lost3 (stop))	(qc	Nb of times:	S	ac	kg / sad	c		
S2M):			Monoc Row in Mixed	ropping1 — tercroping2 — intercropping3		→cm * cm			m *m		Yes	1 0	Harvested1 Not yet harvested2 (sto Harvest lost3 (stop))	(qc	Nb of times:	S	ac	kg / sa	c		
g month (			Monoc Row in Mixed	ropping1 — tercroping2 — intercropping3		•cm * cm			m *m		Yes	1 0	Harvested1 Not yet harvested2 (sto Harvest lost3 (stop))	(qc	Nb of times:	S	ac	kg / sa	c		
Plantinç			Monoc Row in Mixed	ropping1		→cm * cm			m *m		Yes	1 0	Harvested1 Not yet harvested2 (sto Harvest lost3 (stop))	(qq	Nb of times:	S	ac	kg / sa	c		

5.6 – Growing MAF/SoL varieties during the next season										
Ask fo	r MAF/SoL varieties that the f	armer IS	NOT gro	wing						
		Maize	Rice	Peanut	Cassava	Sweet Potato				
5.6.1 VG_	Name of MAF/SoL variety grown									
5.6.2 GIV_	Did you give some of these cuttings/seeds to a relative/neighbour to plant?	Yes1 No0	Yes1 No0	Yes1 No0	Yes1 No0	Yes1 No0				
5.6.3 AG_	Do you intent to grow this MAF/SoL variety again?	Yes1 No0	Yes1 No0	Yes1 No0	Yes1 No0	Yes1 No0	lf Yes, skip to 5.6.5			
5.6.4 WH_	Why not grow this MAF/SoL variety again? <i>Enter code</i> C3						Skip to next crop			
5.6.5 HM_	How much area would you plan to grow? Less than now 1 Same as now	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3				
5.6.6 OT_	Will you also grow another variety?	Yes1 No0	Yes1 No0	Yes1 No0	Yes1 No0	Yes1 No0	lf No. swith to next crop.			
5.6.7 WH1_	Why would you still want to grow another variety? Enter code C4									
5.6.8 HM1_	How much area of the other variety would you like to grow?									
	SoL Other 1	1	1	1	1	1				
	SoL Other 2	2	2	2	2	2				
	SoL Other 3	3	3	3	3	3				

#### C3: Reasons for not planting again

- 1. I would like to but have no more seeds
- 2. No money to buy seeds
- Small production
   Taste not good
- 5. Not adapted to soil and climate condition
- 6. Post-harvest losses important
- 7. Other:
- 999. Don't know

#### C4: Reasons for wanting to also plant another variety

- The other variety is easy to store
   I prefer to eat the other variety
   Not enough MAF/SoL seeds
   Other: \_\_\_\_\_\_

- 999. Don't know

#### Part 6. Familiarity with MAF/SoL varieties

#### Ask only for varieties of MAF/SoL that are not already grown

- 6.1. Have you heard about the following varieties? If No, skip to next variety. (HEA\_)
- 6.2. If yes, from where have you heard about it? (FROM\_) *Tick only main source*.
- 6.3. If yes, why aren't you growing it already? (WHN\_)
- 6.4. If yes, would you be willing to pay to buy this variety? (PAY\_)

	6.1			6.2			6.3	6.4	
	Heard?		Fr	om where	e?		Why not?	Pay?	
	No Yes	MAF	NGO	Media	Relative	Other	C5	Yes No	
Sele	01	1	2	3	4	5		10	
Noi Mutin	01	1	2	3	4	5		10	
Nakroma	01	1	2	3	4	5		10	
Utamua	01	1	2	3	4	5		10	J
Ailuka	01	1	2	3	4	5		10	
Hohrae	01	1	2	3	4	5		10	

#### C5: Reasons why not planting it

- 1. WOuld like to plant but no seeds
- 2. No money to buy seeds
- 3. Low production
- 4. Not good taste
- 5. Not adapted to soil/climate conditions
- 6. Post harvest losses
- 7. Other:
- 999. Don't know

Part 7.	Part 7. Participation in groups											
7.1	Are you, or is another member		Respondent	Other H	H member							
	of your HH, a		GRP_OS									
	member of a		No Yes	No Yes	M F M/F							
	group?	Seed production group01011										
		Other farmer	123									
		Adat	01	01	123							
		Religious grou	up1	01	123							
		Youth group .	01	01 <u>!</u>	123							
		Credit/saving	group1	01	123							
		Other group:	01	1	123							
7.2	Are there CSPGs /	farmer groups	Yes	1								
GRPP	in your Suco that <b>p</b>	roduce	No	0								
	MAF/SoL varieties	seeds?	Don't know999									
7.3	Are there CSPGs /	farmer groups	Yes	1								
GRPS	in your Suco that so	ell/barter	No	0 🗕	Skip to 8.1							
	MAF/SOL varieties	seeds?	Don't know	999 →	Skip to 8.1							
7.4	What seed varieties	s do these		Yes No								
	groups sell?		Sele (GRPSE)	10								
			Nakroma (GRPNA)	10								
		Noi Mutin (GRPNO)	10									
			Utamua (GRPUT)	10								
		Other (GRPOT)	10									

Part 8	Part 8: Household food self-sufficiency												
8.1 HUN	Did your household ex <i>"hungry seasons</i> " duri 2012-May 2013)?	kperie ng the	nce o e last	ne – o 12 mo	r more nths (	e – June		Yes No Don't	know.		1 0 99	<ul> <li>► Skip to 8.3</li> <li>► Skip to 8.3</li> </ul>	
8.2	During which	2012							2013				
HUNM	experience this	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Мау
	"hungry season"?	6	7	8	9	10	11	12	1	2	3	4	5
	months that apply.												
8.3 _AV_	3.3In the last 12 months (June following crops that were g				2013), house	in whi hold?	ch mo	nths w	as foo	d avail	able fr	om the	9
	Mark with "X" all				2012	-					2013		
	the months when you have food.	Jun	Jul 7	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
		6		8	9	10	11	12	1	2	3	4	5
	5 Sweet potato												
84	What did your family											No	
0.4	eat during months when none of your own foodcrops are		Purchased rice (PUR)										
	Read each ontion		C	Other s	self-pr	oduce	d food	(SPF):			1	0	
			(	Other p	burcha	ased fo	od (P	F):			1	0	
			(	Other (	OTH)	·					.1	0	
8.5 PHR	During the last 12 months, in which months	6			20/	10					2012		
-	did the household buy	, Jur	n Ju	Aud	Ser		Nov	Dec	Jan	Feb	Mar	Apr	Mav
	much was bought?	6	7	8	9	10	11	12	1	2	3	4	5
	Write down the quanity(kg)												
	bought for the months when farmers buy rice	-			l								
8.6 Why do you buy rice if you already grow rice? I donot grow enough rice for my whole family .				rice for my whole family									
	For households that also grow rice	<sup>2</sup> My Otl	rice	crop fa	ailed d	uring t	he las	t seasc	on			2 3 4	

Part 9: Agricultural extension services									
9.1 EXKN	Do you know who is the MAF extensionist in your Suco?	Yes1 No0 → Skip to 9.5							
9.2 EXKN	How much do you know him/her?	I never talk to him1 I talked to him 1-2 times2 I talk to him very often3							
9.3 EXRA	What is your rating for services provided by MAF extensionist?	Very bad         1           Bad							
9.4 EXTY	Type of extension services you received in the past 6 months?	Yes         No           Visits0         10           Seed distribution10         10           Training10         10           Fertilizer distribution10         0           Other:         10							
9.5 EXEL	Does anyone else in your family know the MAF extensionists in your suco?	Yes1 No0 → End Don't know							
9.6 EXELS	If yes, is that person a man or woman?	Male1 Female2							

Thank you for your time to answer these questions.

# Appendix III: Short Focus Group Guideline

Example of a focus group in Ermera, suco Malabe

## Short Focus Group Discussion guideline

#### **Objective:**

Collect qualitative information on the sucos access to improved varieties in order to have a better understanding of the results of the MTS.

#### Duration: 1 hour

District: Ermera Suco: Malabe CSPG: 0 Date: 13/8/13

#### Participants:

#### Invited

- Chefe de Suco
- Chefes de Aldeia
- 1 M and 1 F farmer from each aldeia where we have conducted the MTS
- SEO
- CSPG representatives
- (SoL district coordinators)

#### Nb of CSPG in suco:

#### Actual

- Absent
- 1 present
- 2 male and 2 female farmers
- Present
- -
- -

#### Nb of CSPG represented:

#### Proportion of crops growers in the suco:

	MTS result	Focus group result
Maize	100%	100%
Rice	0%	25%
Peanut	0%	0%
Sweet potato	56%	100%
Cassava	89%	100%

### **Guiding questions:**

- 1. Varieties grown: list all varieties grown and ask proportion of farmers growing each variety (using maize seeds)
- 2. Present the results of the MTS surveys in comparison with the above table and the proportion of farmers growing each crop.
  - ⇒ Is it a fair representation of the varieties grown in the suco? Or are certain crops and varieties over- or under-estimated?

Crop	Varieties	Proportion	n For MAF/SoL varieties C		Comparis	on with MTS result
		of farmers	Year	Main sources		FG's opinion
		growing	start		MTS	( <reality or="">reality or</reality>
		the variety	growing		data	good representation)
Maize	Suan 5	18/120	2008	MAF		It is normal that
						we haven't met
	Sele	15/120	2011	CARE		any farmers
						growing Sele or
	Batar Boot	28/120			44%	Suan 5 because
						we went to other
	Batar Laís	59/120			56%	aldeías
Rice	Koko Dílí	90/120				Not asked – we
						probably just
	Lucí Míge	18/120				haven't came
						across farmers
	IR16	12/120				growing rice
Peanut						
Sweet	Lokal mean	14/120			100%	It's normal that
potato	Lokal Mutin	14/120				we had 100% local
	Prolau	6/120				mean in the MTS
	Berlelo	18/120				because all the
	Aídaba	46/120				local varieties
	Hohrael	16/120	2008	CAREand		named in the
	Hohrae2	6/120	2008	then MAF in		focus group are
				2011		red.
Cassava	Fuik	4/120				No comment
	Manteiga Boot	12/120			56%	from group.
	Manteiga	12/120				
	Kük	40/120			78%	
	Nona Metan	7/120	2012	MAF		
	Alluka2	8/120	2012	MAF	Lesu:	
	Ailuka4	5/120			33%	
	Boraisa	12/120				
	Isnora					

3. For each crop, ask which are the 2 preferred varieties and why? Do women/men have different demand/requirements regarding seed varieties?

Сгор	Preferred varieties	Reasons for preferring these varieties	Comment on Women / Men needs
Maize	Batar Boot	Resistant to heat/sun	Thís ís what ís
	Batar Laís	and dísease	avaílable here. No
		Resistant to strong	specífic preference.
		winds	
Rice	Koko Dílí	Adapted to local soil	Short cycle so faster
		condítíon	to eat.
Peanut			
Sweet potato	Aídaba	Many people like to	Kíds líke to eat thís
		buy this variety; it's	varíety.
		resistant to rain and	
		doesn't quíckly spoil.	
		It's nice to eat.	
Cassava	Nona Metan	Good to eat	

4. Had there been seed distributions? From whom, to whom, when and of which varieties? From CARE in 2011 : Sele

From MAF in 2008 (suwan 5 and IR 16) and in 2012 Ailuka 2 and 4 and Hohrae 1 and 2.

5. Have you heard of farmers who have grown MAF/SoL varieties in the past, but have stopped growing them? Why have they stopped (post harvest losses, no market, no access to seeds, not adapted to climate/soil, taste)? Yes because they lost their Sele seeds during storage (weevil infestation) and weren't able to replant Sele in the next cropping cycle.

#### Groups in general

6. How many active farmer groups are there in the suco and what do they do? What proportion of men/women farmers participate in these farmer groups?

There are 3 MAF groups for horticulture and food crops (1 women group and 2 mixed groups)

There are 4 groups from CARE with the same activities

7. Have some groups stopped functioning and why?

Yes, when the groups stop receiving support from MAF or organizations, they usually stop functioning.

#### If there is a CSPG in that suco

- 8. Are people outside the group aware about the CSPG activity?
- 9. What did the CSPG do with the harvest of the last cycles? Have all the farmers in the CSPG received seeds for growing on their own land? Have farmers outside the CSPGs received some seeds from the CSPG?
- 10. Are some women members of the CSPGs and what are their roles? Are they benefiting from the CSPG (seeds for own farm)?
- 11. Does the CSPG plan to continue producing the MAF/SoL varieties or not? If not, do they plan to increase area?

# Appendix IV. Conversion table

## **Conversion table for seeds**

Commodity	Local measurement unit	Conversion (kg)	
		Local	MAF / SoL
Rice	Sack/karong 5 kg	3.5	
	Sack/karong 25 kg	17	
	Bote boot	9	
	Kaleng mina rai 15L	13	
	Kaleng cat 12 L	10	
	Kaleng cat 5 L	4	
	Kaleng SGM 500g	0.5	
Maize	Bote kiik	5	6
	Bote boot	12	13
	Kaleng mina Rai 15L	16	17
	Kaleng cat 12 L	13	14
	Kaleng cat 5 L	6	6
	Kaleng SGM 500g	0.5	
Peanuts (shelled)	Kaleng SGM 500g	?	
	Karong 5 kg	4	
	Bote kiik	3.4	
	Kaleng cat 12L	11	
	Kaleng cat 5L	4.6	
	Kaleng mina rai 15L	14	

### **Conversion table for harvest**

Commodity	Local measurement unit	Conversion (kg)	
		Local	MAF / SoL
Rice	Sack/karong 25 kg	17	
	Sack/karong 30 kg	20	
	Sack/karong 50 kg = KARONG NCBA	34	
	Bidon 200L	180	
	Bidon Asphalte (150L)	135	
	Kaut 700Kg	700	
Maize	Sack/karong 15 kg	13.5	14.5
	Sack/karong 25 kg	22	24
	Sack/karong 30 kg	26	29
	Sack/karong 50 kg = KARONG NCBA	44	48
	Bidon asphalte (150L)	124	135
	Bidon 200 L	165	180
	1 fulen	0.040	0.070
Peanuts	Bote boot	Lucia	5
	Sack/karong 25 kg	11	8.3
	Sack/karong 30 kg	13	10
	Sack/karong 50 kg	22	16.6
Sweet potato	Bote boot	13	
	Saku 25 kg	19	
	Saku 30 kg	23	
	Saku 50 kg	38	

# Appendix V. Example of scale used to estimate productivity of MAF/SoL varieties





## **Appendix VI: Contributors**

#### **Ministry of Agriculture and Fisheries**

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#### **Farmers**

Last but not least, the Mid-Term Survey would not have been possible without the 672 respondents in the 55 Sucos who gave about half an hour of their time to be interviewed about their experience and practices in foodcrop cultivation. We thank them for their willingness to participate in this survey.



# Seeds of Life Fini ba Moris

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 plus the Australian Centre for International Agricultural Research (ACIAR) and is managed by ACIAR. The Centre for Legumes in Mediterranean Agriculture (CLIMA) within The University of Western Australia (UWA) coordinates the Australian funded activities.

Improved food security through increased productivity of major food crops



