TOMAK

To'os ba Moris Di'ak

Farming for Prosperity

TOMAK Micro Baseline Study
Mung Bean / Shallot

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MERCY CORPS

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Table of Contents

Abbreviations & Acronyms

AEW	Agricultural extension worker
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus group discussion
GAP	Good Agricultural Practice
HH	Household
MAF	Ministry of Agriculture and Fisheries
MSD	Market systems development
NGO	Non-government organisation
TOMAK	To'os ba Moris Di'ak Program (Australian Aid)
USD	United States dollar

Executive Summary

To'os Ba Moris Di'ak (TOMAK) is a A$25 million, 5-10 year agricultural livelihoods program funded by the Australian Government in Timor-Leste. Its goal is to ensure rural households live more prosperous and sustainable lives. TOMAK will achieve this through parallel and linked interventions that aim to:

- Establish a foundation of food security and good nutrition for targeted rural households.
- Build their capacity to confidently and ably engage in profitable agricultural markets.

Within Outcome 2, TOMAK is targeting four initial market systems for development, including mung bean, shallot, peanut and red rice. This initial baseline study was developed to cover early interventions under Outcome 2 (Market System Development) in the mung bean and shallot market systems. The interventions are aimed at improving agricultural production techniques, through the use of demonstration plots ("demplots"). This study is the first in a series of "micro-baselines" designed to progressively establish a baseline for indicators within Outcome 2 under the TOMAK program.

The baseline covered 159 survey respondents (79 women) over three municipalities (Bobonaro, Viqueque and Baucau), and 30 participants in focus group discussions. It was conducted from 15 – 26 May 2017. The baseline process, while providing a small initial study, also provided an opportunity to establish the approach and implementation of such studies within the TOMAK team as well as learnings that can be applied to improve these moving forward.

Key findings from this study are:

- The Progress Out of Poverty index results show respondents are highly likely to be living below the upper international poverty lines.
- Landholdings are small: On average, the land size available to farmers was approximately 0.83 hectares, with most of this land being cultivated. Very small amounts of land are currently dedicated to shallot and mung bean.
- Average revenue per capita for shallot and mung bean is approximately USD54.41 per year and USD4.75 per year respectively
- The average yields for shallot and mung bean is approximately 2,128kg/hectare and 1,069kg/hectare respectively.
- Use of agricultural techniques supporting greater productivity was limited within the respondents, reflecting largely subsistence practices and lack of technical knowledge and inputs.
- On average, 45% of overall production harvests are sold, with households consuming 29%. Thirteen percent of harvests were reported as being wasted, with 29% kept as seed.
- The vast majority of respondents (76%) normally sell their products directly to consumers, with only a quarter of respondents reportedly selling through others (i.e. aggregators).
- Farmers cited fertiliser, equipment and labour as the most common costs of production, followed by seeds and pesticides.
- Major constraints to production were reportedly weather conditions, disease management and availability of labour. Few farmers felt access to inputs was problematic. During harvest, storage was the main reported challenge, followed by availability of labour and access to markets.
- Men have greater inputs into decision-making relating to agricultural production, money management and expenditure decisions than women. Women were largely responsible for day-to-day money management, although reported needing to seek permission on expenditure for some (normally larger) items. Expenditure on cultural ceremonies was largely decided together.

- Despite women being responsible for multiple production and harvest tasks, men were perceived as spending more time overall on agricultural production. Women acknowledged their additional tasks in the home, on top of agricultural responsibilities.
- More men reported receiving support to improve their farming than women. This was reportedly provided by agricultural extension workers (AEWs) and NGOs, usually once or twice a year. When received, this was appreciated by farmers who often felt it was of significant benefit.
- TOMAK is monitoring dietary diversity indicators within Outcome 2 to analyse whether increases in income impact the purchase of nutritious food. Household dietary diversity was reportedly relatively high. Going forward, TOMAK will shift to using the Food Consumption Score, which will provide greater detail on consumption patterns for individuals in households over a 7-day period and also more reviews sources of foods in more detail (i.e. on-farm or purchased).

Main Report

1. Introduction

To'os Ba Moris Diak Program (TOMAK) is a A$25 million, 5-year agricultural livelihoods program funded by the Australian government in Timor-Leste. Its goal is to ensure rural households live more prosperous and sustainable lives. TOMAK will achieve this through parallel and linked interventions that aim to:

- Establish a foundation of food security and good nutrition for targeted rural households.
- Build their capacity to confidently and ably engage in profitable agricultural markets.

The primary target area comprises inland mid-altitude areas that have some irrigation capacity. This zone currently includes 66 suku, located mainly in the Maliana basin (including most of Bobonaro) and the eastern mountain regions (including large parts of Baucau and Viqueque).

This first baseline study was developed for the early interventions under Outcome 2, targeting mung bean and shallot market systems. The baseline process, while providing a small initial study, also provided an opportunity to establish the approach and implementation of such studies within the TOMAK team as well as learnings that can be applied to improve these moving forward.

1.1. Background and objectives

The baseline study is the first in a series of "micro-baselines" designed to progressively capture data for indicators within Outcome 2. Micro-baselines will be rolled out as interventions in selected market systems (shallot, mung bean, peanut and red rice) commence, with data aggregated following this process. This initial baseline focussed on the mung bean and shallot market systems, focussing on areas where demonstration plot activities have commenced across the three target municipalities.

The demonstration plot intervention objectives are designed to test new technologies and varieties on a small scale before rolling these out to more farmers. Farmers selected to pilot the demplots have either been recommended by the Ministry of Agriculture and Fisheries (MAF) or other organisations. TOMAK is trialling four demplots per crop per municipality initially, totalling 16 demplots between shallot and mung bean. Each farmer is supported by an agricultural extension worker (AEW), with weekly visits. Both the farmer and the AEW are supported by an international agronomist who trains farmers and AEWs together in the farmer's field. During the cropping season (3-4 months) other neighbouring farmers will be invited to Farmer Field Days twice, where new technologies will be explained, with a view to attracting interest for activity expansion. Farmer Field Schools will also be established to further increase exposure of additional farmers to the improved practices being promoted.

The baseline objectives were to:

- Estimate current income earned from agricultural activities
- Review current production practices being applied by farmers (women and men)
- Assess agricultural support received by farmers
- Assess women's economic empowerment in households
- Assess household dietary diversity to reflect changes in household expenditure towards nutritious foods

The baseline involved 159 survey respondents (79 women) in three municipalities (Bobonaro, Viqueque and Baucau); and 30 focus group discussion participants. It was conducted from 15 – 26 May 2017.

This report provides an outline of the methodology and its limitations, the key findings and baseline data. Primary data collection tools are provided in Appendix 2 and 3.

2. Methodology and sampling

2.1. Sampling

Respondents were selected in three key groups for the study: the treatment group – those farmers actively involved in TOMAK farming interventions for mung bean and shallot; the spill-over group – those farmers not directly involved, but highly likely to be exposed to the intervention (due to proximity or through direct invitation to intervention activities) and the comparison group – those farmers not involved and less likely to be influenced by the interventions. The latter group will serve to develop TOMAK's understanding of 'net' impact of its interventions, by providing a basic counterfactual, as further data is collected and at endline.

The sampling for this baseline process was small. TOMAK considers this a 'micro' baseline study. As such, the data is not yet representative and findings cannot be generalised across the TOMAK focus regions at this stage. The same, or similar, data will be collected over time as interventions progress across TOMAK's target areas, allowing for the accumulation of data that will aim to become more representative over time.

Surveys were conducted with 159 respondents over three municipalities (Bobonaro, Viqueque and Baucau). A breakdown per group is provided below, including 79 women.

Table 1: Sample summary

Municipality	Treatment	Spill-over	Comparison	Totals
Bobonaro	16	32	32	80
Baucau	8	16	16	40
Viqueque	7	16	16	39
Totals	31	64	64	159

In addition, four focus group discussions (FGDs) were held with between six to eight women farmers per crop in order to capture women's perspectives on farming roles and responsibilities within families. This included two FGDs in the eastern TOMAK region (one in Baucau and one in Viqueqeue) and two in Bobonaro. In total, 30 women participated in the FGDs.

Surveyed farmers were selected by applying a simple set of observable characteristics to provide a basic level of comparability. These are outlined below, in order of priority:

- Farmers must be selling some of their agricultural production (in this case, mung bean or shallot) – this criteria was mandatory;
- Farmers should have reasonable road access; and
- Farmers should have reasonable access to water for farming.

Further sampling details are provided in Appendix 1.

The baseline study drew on TOMAK-produced reports to supplementary primary data and support analysis, including:

- Value Chain Assessments for Selected Agricultural Products (December 2016)
- Product aggregator study (in development)
- Analysis of Secondary Data (December 2016)

2.2. Data collection tools

The baseline study collected primary data through two tools – farmer surveys and FGDs. Within the same household, the male head of household and the female head of household were surveyed separately, each by an enumerator of the same gender.

The survey for men examined farming income at household level, recognising that in the Timorese context it is extremely difficult to attribute income separately to men and women living in the same household. This also included questions pertaining to farming production practices specific to the two focus crops and earnings related to these crops in order to estimate household income. The survey for women explored access and agency questions, and the Household Dietary Diversity Score, given that Timorese women are primarily responsible for food preparation in households and therefore more likely to be able to accurately respond to these questions. The surveys included areas of commonality between women and men farmers to allow for some comparison of responses, as well as areas that collected different data. The surveys are provided at Appendix 2.

The FGDs were conducted only with women involved in farming mung beans and shallot with a view to deepening a qualitative understanding of the role of women in these crops. The FGDs aimed to further investigate household decision-making relating to farming and income with women, as well as access to opportunities and assets. The FGD questions and facilitator instructions are provided in Appendix 3.

The tools were developed by the TOMAK MRM team then reviewed internally by the Market Systems Development Specialist and Gender and Women's Empowerment Specialist, before being loaded online by an external provider to be administered via tablets. The surveys were field-tested by the TOMAK M&E Manager and two Lead Enumerators (see below) with adjustments made ahead of enumerator training.

2.3. Selection and training of enumerators

Eight enumerators were selected from TOMAK's casual enumerator pool (now totalling 20 enumerators), which was established through a recent recruitment exercise undertaken by the M&E Manager. The enumerator team included four women and four men, responsible for administering surveys in the East and West data collection areas. Enumerators worked in pairs per household, with women enumerators surveying female heads of households and men surveying male heads of households. Two of the women facilitators led the FGDs, with two men enumerators supporting by taking detailed notes. The MRM Team selected one lead enumerator for each team, to provide general coordination and data quality review of surveys at the end of each day, prior to submission of surveys online.

The M&E Manager delivered enumerator training over two days, supported by the MRM Adviser. The training included one and a half days focussing on the content and structure of the tablet-based survey, question familiarisation and use of the tablets. The training included the need for enumerators to outline to potential respondents the purpose of the surveys, confidentiality and privacy of any data collected and the proposed use of the data ahead of conducting data collection. Enumerators were fully briefed to ensure permission to proceed was sought from respondents, before commencing surveys or FGDs. The training also covered issues of bias, familiarising the enumerators with a range of possible areas of bias, and outlining methods to manage these. For instance, enumerators were instructed to conduct surveys in quiet, private areas without other people nearby, in order to allow respondents to answer more freely and without tailoring their answers to surrounding community expectations. Language within the surveys was tested and adjusted to ensure it was easy to understand and did not suggest or lead respondents to particular answers.

A half day of training was delivered for four enumerators (two women and two men) to conduct FGDs.

2.4. Field data collection and data management

The enumerators conducted data collection over a two-week period from 15 – 26 May, with two teams of four enumerators each (one team in Baucau and Viqueque, one in Bobonaro). During the first week, the M&E Manager accompanied one team of enumerators to Viqueque and Baucau, and the MRM Adviser accompanied the other enumerator team to Bobonaro, to support initial rollout and data quality review. The daily schedule per region aimed to cover four households, with both the female and male head of the household interviewed (where they were both available). The regional TOMAK offices provided coordination support, including contact with local authorities to seek approval for the data collection activities as well as providing scheduling and logistical support. This support ensured a high response rate from targeted respondents.

The collection of data using tablets allowed for immediate data entry via the Kobobox online platform. Results were exported to excel for analysis (see below). Data was cleaned by the M&E Manager in excel and analysis

led by the MRM Adviser, with support from the M&E Manager. Analysis of the survey was primarily quantitative in nature.

Facilitators recorded FGDs using the tablets in-built voice recorders, with prior permission sought from participants. Enumerators transcribed the FGD recordings, with transcriptions quality reviewed by the M&E Manager. Following this process, the MRM Adviser undertook a qualitative analysis, reviewing the data by key categories and relating these to the indicators of interest.

2.5. Limitations

The selection of respondents (at least in the West) required support and coordination through local leaders, including the *xefe suku* (village chief) and *xefe aldeia* (hamlet chief). This may have contributed to unobservable selection bias, possibly towards more advanced farmers. It may also have pressured farmers to be involved in the data collection processes. While enumerators are fully trained and briefed to describe to respondents the process, privacy of data and seek consent to participate, by this point it may have been too late for respondents to feel they were able to decline.

Farmers' capacity to accurately estimate harvest amounts and sale amounts was limited, which is a common issue with smallholder farmer interviews. This data was open to reporting bias and challenges for enumerators in eliciting figures. Analysis therefore drew on FAO yield figures, triangulated against reporting from farmers, which provided consistency and also reflected average yield amounts reported in TOMAK's Value Chain Assessment. These estimated yields were used to calculate estimated income. The survey will be revised for future use, discarding some responses that did not greatly contribute to analysis.

The FGD results were slightly limited, primarily due to the skill of facilitators. Also, due to scheduling FGD alongside ongoing surveys, men enumerators had been allocated to take detailed notes during the FGDs, which may have constrained women farmer's responses. In future, facilitators *and* note takers should be women, for women's FGDs. The FGD training provided for enumerators was short and can be improved going forward. TOMAK intends to develop and deliver more focussed and detailed FGD (and other qualitative tool) training for selected enumerators, to ensure a ready cadre of appropriately skilled facilitators are available when required.

2.6. Proposed intervention

The demonstration plot objectives are twofold. Firstly, to test new technologies and varieties on a small scale before rolling these out to more farmers. Secondly, to promote TOMAK to farmers by organising farmer field days at key points of one cropping season. Individual farmers selected to pilot the demplots have either been recommended by MAF or by other organisations. Each farmer is to be supported by their Agriculture Extension Worker (AEW), with weekly visits. Prior to plot establishment, TOMAK technical staff train the AEWs on Good Agriculture Practices (GAP) and then support them in their work with farmers. During the cropping season (3-4 months) other neighbouring farmers are invited to participate in Farmer Field Schools twice or three times, where new technologies will be explained, with a view to attracting interest for activity expansion. Activities will be expanded to more farmers if there is a proven market for the products.

This is the entry point for TOMAK to these communities. Activities will be expanded to more farmers if there is proven market for the products.

3. Findings

Table 2: Indicator baseline summary

Indicator	Mung bean	Shallot	Overall
Impact			
Proportion of households that report improvements in income from increased agricultural sales	• Average per HH revenue USD19/year • Average per capita revenue USD2.97/year	• Average per HH revenue USD368/year • Average per capita revenue USD54.51/year	• Average per HH revenue USD892/year1 • Average per capita revenue USD139/year
Proportion of women reporting increased decision-making authority in household resources and finances	• 25% women reporting input into all production-related decisions • 86% women reporting management of income from agricultural sales • 33% women reported input into all house-hold expenditure decisions		
Proportion of women reporting manageable workloads	Women reporting on average 92 days of inputs	Women reporting on average 106 days of inputs	N/A
Proportion of women reporting improved access to productive assets	Qualitative assessment showed land predominantly owned by men and is generally lost by women that marry and move away from the family.		
Outcome			
Improved yield per hectare and reduced post-harvest losses	• 1,069kg/hectare • Average 12% harvest wastage	• 2,128kg/hectare • Average 15% harvest wastage	(Per crop) • Average 13% reported wastage
Proportion of 'word of mouth' farmers copying and adopting new practices	To be measured through monitoring and endline	To be measured through monitoring and endline	To be measured through monitoring and endline
Farmers report that they are profiting from engagement with buyers	To be measured through monitoring and endline	To be measured through monitoring and endline	To be measured through monitoring and endline

[1] Across ten specified crops as proxy for 'overall' agricultural revenue

Indicator	Mung bean	Shallot	Overall
Type, volume and value of produce purchased by buyers from farmers[2]	• 50kg-250kg purchased by aggregators from farmers per purchase, buying from approx. 50 farmers each per year • Average USD2.10/kg paid to farmers	• 127kg purchased by aggregators from farmers per purchase • Average USD1.54/kg paid to farmers	N/A
Buyers report satisfaction with sourced volume, consistency and quality	Not measured for this baseline	Not measured for this baseline	Not measured for this baseline

3.1. Demographic information

The Progress Out of Poverty Index is a globally applied tool developed by the Grameen Foundation to simply and rapidly assess the likelihood that households are living in poverty. Average likelihoods of poverty against international poverty lines is shown in table 2 below. The results demonstrate that participants in this baseline assessment are highly likely to be living below the upper international poverty line.

Table 3: Progress Out of Poverty Index results

Poverty line	Average likelihood of respondents to be considered 'poor' against poverty lines
$2.50 International Poverty Line 2005	80.5%
$1.25 International poverty line 2005	26.3%

The PPI is used by TOMAK to gain a rapid snapshot of farmers likely to be living in poverty and also to measure the contribution interventions are making towards improving income, on a scale that is meaningful. The Index includes 10 key questions covering household size, land ownership, education and household assets.

Average household size was 6.4, with 71% of households surveyed having six or more members. 71% of respondents reported owning their land without a 'reference number' or certificate. The head of household's main occupation was reported as 'agriculture and animal husbandry (farming), forestry, fishing, or hunting'.

Education was relatively low. Thirty one percent of respondents reported the head of the household (usually male) had no education or only up to primary class 1. Twenty one percent reported the head of household had education between primary levels 2 to 5, with 19% reporting studying up to class 6 or pre-secondary class 2. Twenty eight percent reported education to pre-secondary class 3 or higher.

[2] Data taken from TOMAK Aggregator Study (forthcoming)

3.2. Agricultural activity and income

Section 3.2 presents the overall findings from the respondents. Sections 3.3 and 3.4 present findings for the mung bean and shallot sub-sectors.

3.2.1. Income from agricultural activity

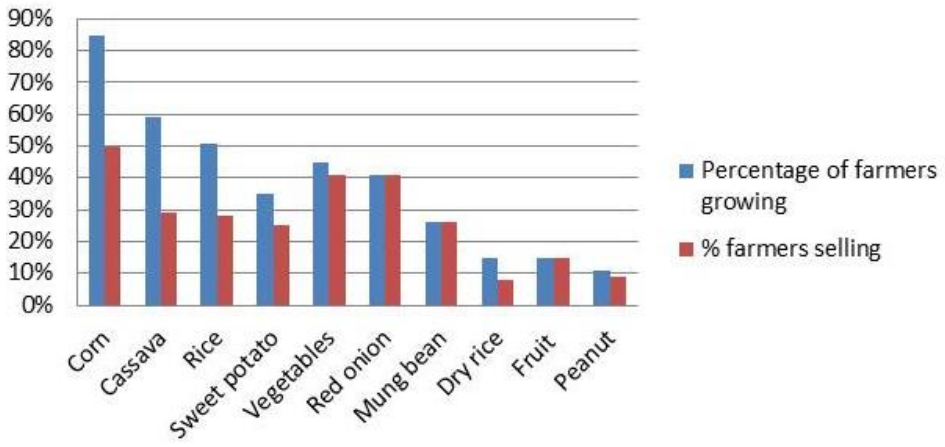
On average, the average land size available to farmers is approximately 0.83 hectares, mirroring estimates in TOMAK's Value Chain Analysis. Out of the 80 households surveyed, farmers reported using most or all of their land for agricultural cultivation, on average reporting 96% land utilisation, which is unsurprising given the small farm size. Estimated yields, based on historical FAO data for Timor-Leste, are shown below in Table 4. These were triangulated against farmer reports of yield per crop, with FAO data proving more conservative.

Table 4: Yields per crop, per hectare

Crop	Average kg/ha*
Shallot	2,128
Rice	2,987
Peanut	1,247
Corn	2,186
Fruit	10,165
Sweet potato	2,609
Dry land rice	2,987
Vegetable	4,081
Mung bean	1,069
Cassava	4,071

Figure 1 below shows the crops that are grown and sold by respondents, in order of most to least common.

Figure 1: Percentage of farmers growing and selling specific crops



Revenue derived from crop production was calculated using household survey data and historical FAO data, taking into account average planted areas, estimated yields (FAO data), and the amounts being sold and prices received. Note that this does not represent total household income, but just that portion derived from cropping activity.

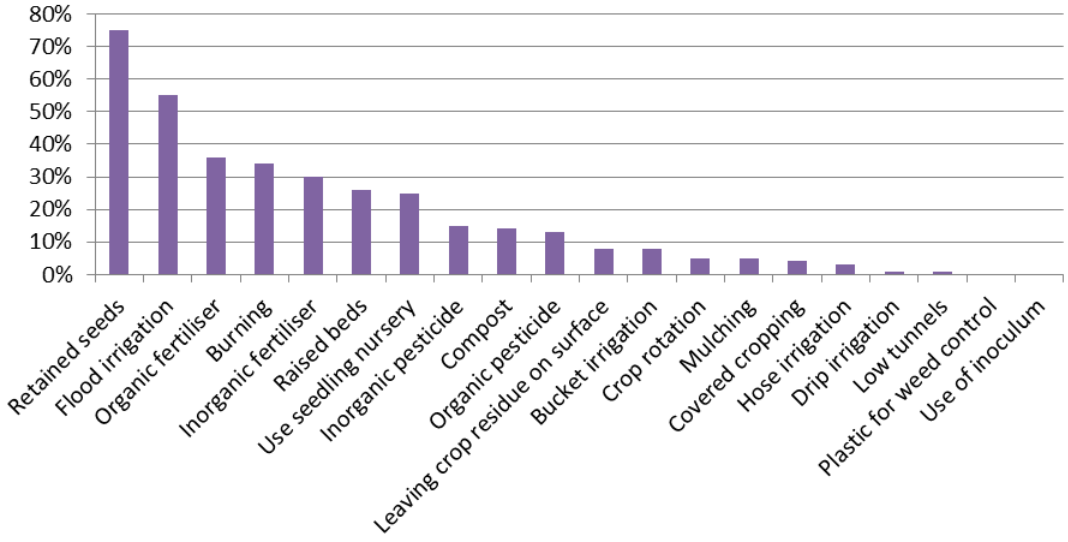
From the ten crops mentioned by farmers as being grown and sold, average income per household from crops sales was estimated at USD892 per year. This translates to an average per capita revenue of USD139 per year, reflecting the frequently large sizes of Timorese households.

The use of more advanced agricultural techniques was limited within the respondents, reflecting largely subsistence practices. 75% reported using retained seeds, 55% reported using flood irrigation. Following this, around one third of respondents reported using organic and inorganic fertiliser, burning, raised beds and seedling nurseries. Thereafter, mention of other methods of production was extremely limited.

Net Attributable Income Change (NAIC)

Net attributable change in income refers to those changes that can be linked to program inputs and discounts any other factors that may have contribute to income change. To do this, TOMAK uses a combination of primary and secondary data. The calculations work from the size of land used to grow specified crops, average yields using historical FAO data, average sales prices reported by farmers less estimated production costs. The resulting revenue estimates will be compared with a 'comparison' group at endline that have not been involved with TOMAK interventions, to provide a counterfactual and a closer estimate of actual income change that may be attributable to TOMAK.

Figure 2: Average overall percentage of farmers using production methods

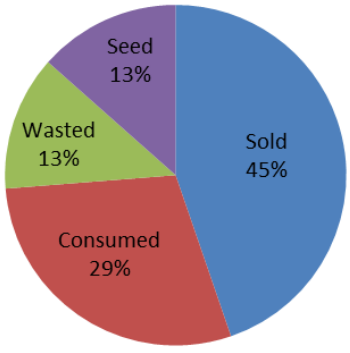


3.2.2. Agricultural sales, costs, practices and constraints

On average, respondents reported that 45% of total production is sold, with households consuming 29%. Thirteen percent of harvests were reported as being wasted with the remaining 13% being kept for seed. In Bobonaro, women in the FGD reported they have a deciding role on harvest use - "women will decide whether to consume, sell or keep as seed for replanting."

The vast majority of respondents (76%) normally sell their products directly to consumers, with only a quarter of respondents reportedly selling through other people (i.e. aggregators), demonstrating a low general use of this market function. Of those selling directly to

Figure 3: Use of harvest



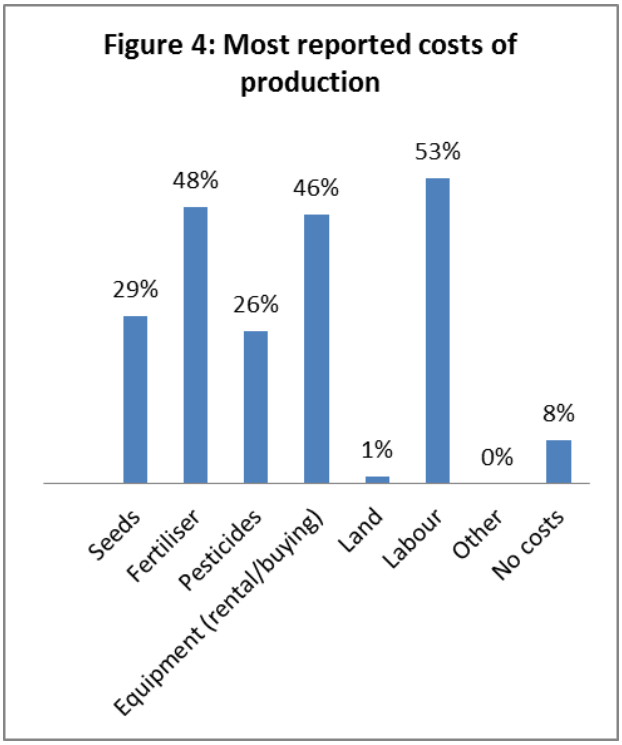
consumers, nearly all sales are usually at the sub-municipal or municipal level markets (98%).

Farmers cited fertiliser, equipment and paid labour as the most common production costs, followed by seeds and pesticides. Eighty-five percent of farmers reported spending upwards of $30 a year on costs of inputs. Fifty-three percent reported spending $100 or more, and 23% reported spending above $200. On average, the cash spend on inputs was $110.

Fifty-five percent of respondents reported reinvesting half of their income from each season's harvest into the next season. Forty-one percent reported re-investing only a small or very small portion of the income generated from agricultural production.

Major constraints to agricultural production were reportedly weather conditions, disease management and availability of labour. Forty-five percent of farmers reported weather-related constraints, 44% reported challenges with disease management and 24% cited labour shortages. Few farmers felt access to inputs was problematic. During harvest, storage was the main reported challenge, with labour and access to markets following. Interestingly, a high percentage (31%) of respondents didn't perceive having any key challenges during this period.

Figure 4: Most reported costs of production



FGD results supported these findings, particularly around the impact of climate (rain damage, humidity) and also pests. In Bobonaro, some respondents indicated lack of access to inputs, and their high cost, including fertiliser and pesticides. This finding (contrary to the survey findings) may indicate a perception difference between men and women farmers, considering FGDs were held with women and farmer's economic surveys were administered with men. Lack of market access for mung bean was also mentioned in Bobonaro.

Figure 5: Constraints during production

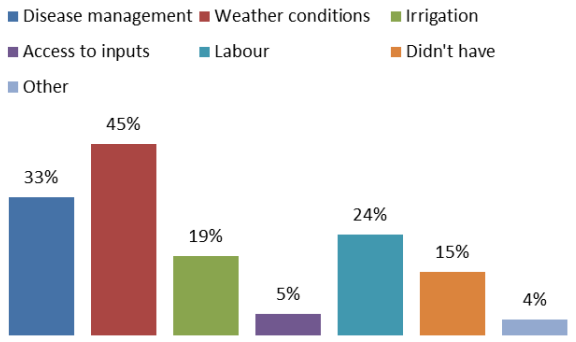
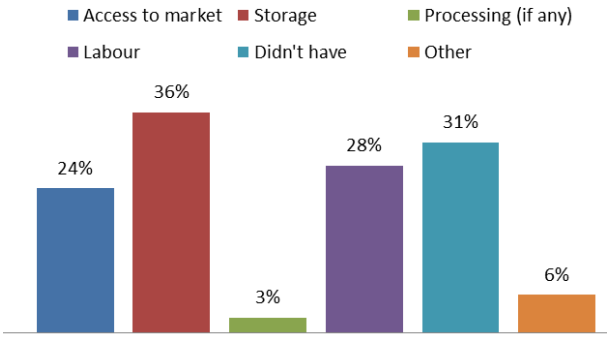


Figure 6: Constraints during harvest



3.3. Mung bean

3.3.1. Income from agricultural activity

Average land area dedicated to the cultivation of mung beans was 0.18 hectares. Average yield per hectare was estimated at 1,069kg. Prices per kilo are estimated at USD2.10. This figure was derived from a combination of sources including the farming agricultural household survey, market price information collected by the MSD team and further rata collected in TOMAK's Aggregator study.

TOMAK's Aggregator study reports an average quantity of 50kg-250kg of mung bean is purchased by aggregators from farmers per purchase, who are buying from approximately 50 farmers each per year.

From the 21 households reporting to grow mung beans, the average household revenue was very low at USD19 per year (per capita USD2.97).

3.3.2. Agricultural sales, costs, practices and constraints

FGD participants reported only small quantities of mung bean were produced, although when there were surpluses, these were sold.

Of those selling mung bean, 67% sold directly to consumers, with 33% selling to resellers. Of those selling directly to consumers, 50% sold at markets at municipal level, with 43% selling at sub-municipal-level markets. The average costs per year per household was reported as USD97.

For mung bean farmers, there was low use of more advanced agricultural techniques (see Figure 8 below). Many farmers reported retaining seeds for future production.

Figure 7: Reported use of mung bean harvest

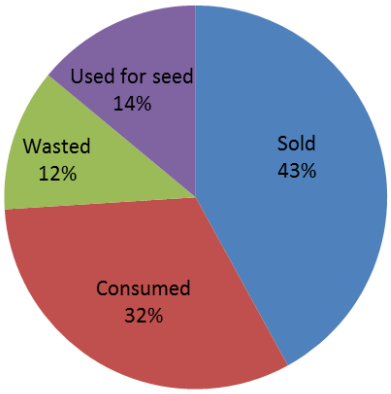
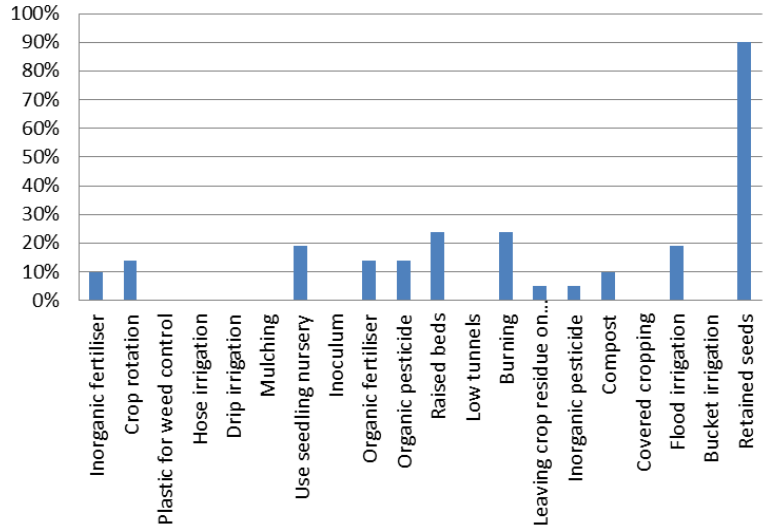


Figure 8: Mung bean farmers - methods of production



Farmers were asked about key constraints experienced during the production process. Fifty percent of mung bean farmers identified disease as a key production constraint. Only 10% mentioned weather and access to labour as constraints, with few farmers mentioning any other challenges.

Farmers were also asked about challenges during the harvest and post-harvest period. Twenty three percent cited storage as a key challenge, however 15% reported not having any key constraints at this time. Five percent reported access to labour and markets as challenges at this time.

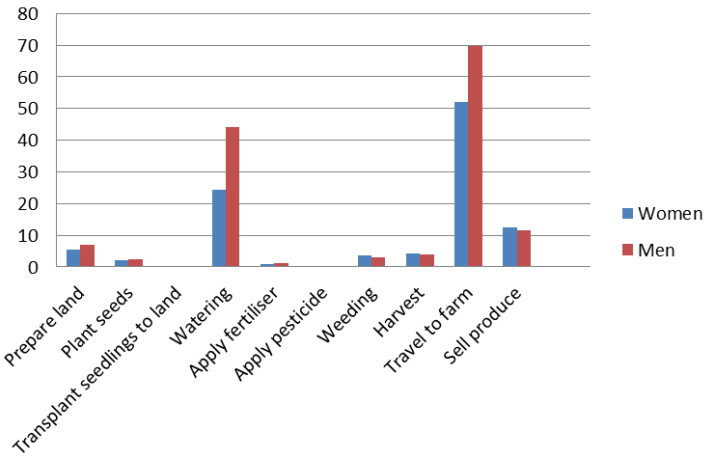
3.3.3. Workloads

Respondents were asked to estimate the time spent on different stages of the production process for mung bean. Responses are estimates and used to provide a guide to time inputs from the perspective of women and men. Each gender reported on their own inputs, which are summarised below. Women report spending around

92 days in total while men reported 117 of inputs. The clearest time burden reported by both genders was around travel to the farm.

It was also reported that children (girls and boys) in families support mung bean production, including planting seeds, weeding, preparing land, harvest and travelling to the farm.

Figure 9: Women and men's reported input days - mung bean



3.4. Shallot

3.4.1. Income from agricultural activity

Average land area dedicated to the cultivation of shallots was 0.17 hectares. Average yield per hectare was estimated at 2,128kg. Prices per kilo are estimated at USD2.10. This figure was derived from a combination of sources including the farming agricultural household survey, market price information collected by the MSD team and further data collected in TOMAK's Aggregator study.

TOMAK's Aggregator study reports an average quantity of 127kg of shallot purchased by aggregators from farmers per purchase, although also reported the prevalence of imported shallot being traded by aggregators interviewed for the study.

For the farmers that reported growing shallots (33 households), average per household revenue is USD368 (per capita is USD54.51/year).

3.4.2. Agricultural sales, costs, practices and constraints

For shallot, FGD participants reported selling large proportions of the harvest – in Bobonaro, for example, two thirds were reportedly sold, with one third kept for seed.

Of those selling shallot, 79% sell directly to consumers, with 21% selling to resellers. Of those selling directly to consumers, 35% were selling at municipal-level markets, with 65% selling at markets at sub-municipal level. The average costs per year per household was reported as USD100.

Shallot farmers showed greater diversity in the use of agricultural techniques. Over 50% of shallot farmers reported using organic fertiliser, flood irrigation and retained seeds. Over 40% reported use of burning. Thirty-nine percent report using inorganic fertiliser and 30% reported use of raised beds.

Figure 10: Reported use of red onion harvest

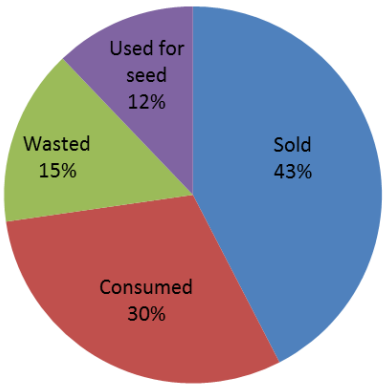
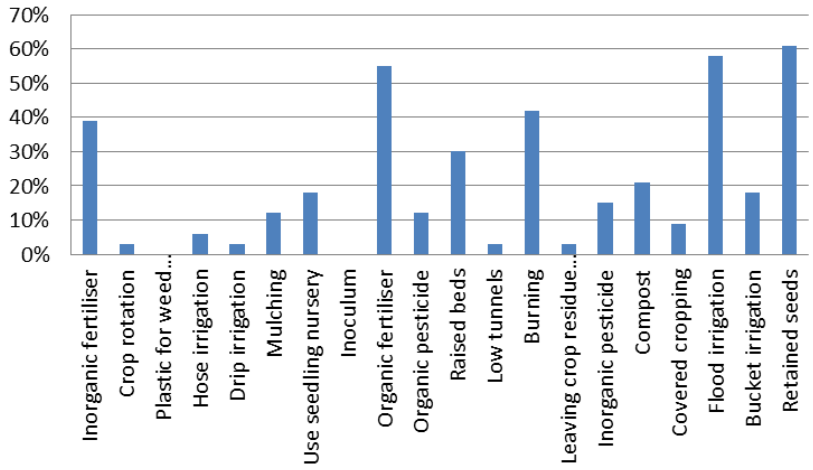


Figure 11: Red onion farmers - methods of production



Key constraints to production included weather conditions (reported by 64% of farmers), and disease management and irrigation (both reported by 33% of farmers). Twelve percent reported no challenges during production.

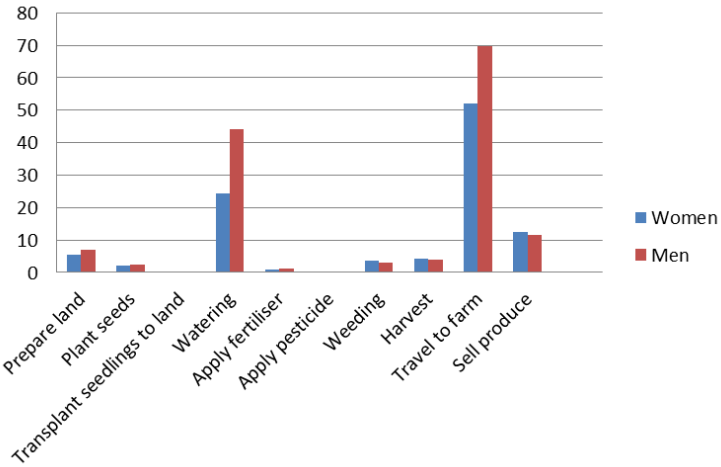
During the harvest and post-harvest period, 55% of farmers cited storage as a key constraint, with 12% respectively reporting access to labour and markets as challenges. However, 36% farmers didn't feel they faced challenges during this period.

3.4.3. Workloads

Respondents were asked to estimate the time spent on different stages of the production process for shallot. Responses are estimates and used to provide a guide to time inputs from the perspective of women and men. Each gender reported on their own inputs, which are summarised below. Women report spending around 106 days in total, while men reported 143 days of inputs. The time burdens reported by both genders are around watering and travelling to the farm.

It was also reported that children (girls and boys) are very involved in supporting shallot production, including applying fertiliser, planting seeds, watering weeding, selling (girls), preparing land, harvesting and travelling to the farm.

Figure 12: Women and men's reported input days - mung bean



3.5. Access and agency

3.5.1. Household decision-making and land ownership

In relation to decision-making roles on farming activities, survey responses showed a significant weighting towards women at the lower end of the scale i.e. less input into production-related decisions. Men largely report that they have greater inputs into production-related decisions.

Table 5: Input into farming decisions

Response	% Women agreeing	% Men agreeing
No input	3%	6%
Input into very few decisions	33%	5%
Input into some decisions	20%	23%
Input into most decisions	19%	48%
Input into all decisions	25%	19%

The FGDs showed some differences in perceived inputs to decision-making between the regions. In Baucau and Viqueque, the participants felt that the type of crops and methods of production were decided by women. In Bobonaro, this was mostly decided by men, with some inputs by women if it was felt a decision was not considered by women to be "effective". Men in Bobonaro decided on the equipment needed for farming, including purchasing decisions.

Regarding management of income from agricultural sales (this question relates to who receives and handles cash on a daily basis), women and men who were surveyed largely agreed that women 'manage' household cash, although more men perceive a shared responsibility.

Table 6: Money management

Response	Women	Men
I manage the income from agricultural sales	86%	3%
My spouse manages the income from agricultural sales	8%	83%
My spouse and I manage the income from agricultural sales together	6%	15%

FGD responses supported this finding with women resoundingly highlighting that they manage the daily finances, and stating that men "*don't know exactly about the household needs we need to use money for, (eg. for food), while women know this well*" (Respondent from Viqueque, May 2017). There is considerable distrust in men's ability to be responsible in the management of money. "*If men keep the money, they will use it for gambling, smoking and drinking alcohol. Better we save it and whenever they need it they can ask*" (FGD respondent from Viqueque, May 2017). That said, some responses indicated a need to seek permission from men for expenditures, particularly for larger expenditures. Expenditure on cultural ceremonies was seen as important (and unavoidable) as daily expenses, with these decisions shared between women and men.

In a related question, when asked who makes decisions around the use of income generated from agricultural sales, women's survey responses largely mirrored those of decisions related to production inputs (see above).

Table 7: Input into expenditure decisions

Response	% Women agreeing	% Men agreeing
No input	3%	0%
Input into very few decisions	15%	1%
Input into some decisions	23%	44%
Input into most decisions	27%	26%
Input into all decisions	33%	29%

Focus group responses largely showed the prevailing ownership of land by men, which generally is handed to sons. Women reported land as being "*my husband's land*" or "*my parents' or big brother's land*", but felt "*as if it is my own land*". On marriage, women may relinquish any right to land use, particularly if they move away from the area. On death, land passed to sons.

3.5.2. Support for farming

Thirty-five out of 80 male respondents (44%) reported receiving external support for farming during the last 12 months. Of these, 26 reported receiving assistance from MAF's AEWs with nine reportedly receiving assistance from NGOs. Most respondents reported receiving support once (18) or twice (15) with very few receiving any more frequent support. The majority of men receiving assistance (77%) felt it provided a 'large benefit'. Seventeen percent felt the benefit was small, and just two respondents reported no benefit following assistance.

Thirty-one out of 79 female respondents (39%) reported receiving assistance over the same period. Of these, 21 reportedly received this from AEWs, eight reported that support came from NGOs. One female respondent reported receiving assistance from an input supplier and another from other farmers. The majority received help once during the year (21) with seven women receiving assistance twice. Again, very few receiving any more support over the year. Most women (58%) perceived the support provided them with significant benefits, although 26% felt the benefits were small and 16% felt there no benefits from the support received.

FGD participants reported receiving some initial support for shallot from AEWs and an NGO, but no support for mung bean production.

Table 8: Type of support received for farming activities

Type of support received	Men (35)	Women (31)
Training	71%	35%
Information materials	9%	3%
Market information	6%	3%
Agricultural equipment	23%	29%
Seeds	71%	94%
Other	0%	0%

3.5.3. Household dietary diversity

TOMAK aims to influence nutrition behaviour change in households to prioritise the purchase of nutritious food. With this in mind, the baseline survey incorporated questions to calculate Household Dietary Diversity Scores (FAO). The score measures household economic access to food, with the underlying principle being that greater economic capacity will result in greater dietary diversity. The reference period is for the 24 hours preceding the survey and the respondent is the person responsible for household food preparation during this time (in Timor-Leste, women). The survey asks about food consumed both inside and outside the home.

The table below shows the average household dietary diversity score breakdown by municipality. Overall, respondents from three municipalities were consuming above five types of food during the preceding 24 hours. Using the score, the baseline found that the average dietary diversity score for the surveyed respondents was 6.7 out of total possible score 12, indicating borderline 'high' dietary diversity. This score does not allow analysis of who in the home ate specific foods, nor the quantity or frequency per consumer.

Table 9: Municipality level household dietary diversity

Municipality	Dietary diversity score
Baucau	7.1
Bobonaro	6.8
Viqueque	6.4
Average	**6.7**

The table below shows a tertile breakdown between low, medium and high dietary diversity households.

Table 10: Breakdown between low, medium and high dietary diversity households

Dietary diversity tertiles	No.	%
Lowest dietary diversity (≤ 3 food groups)	0	0%
Medium dietary diversity (4 and 5 food groups)	15	19%
High dietary diversity (≥ 6 food groups)	64	81%

Table 11 shows the highest consumed food groups by household respondents. The majority of respondents were consuming rice and vegetables, some households were consuming corn, meat, fish and legumes. Most households were also using oil and spices, such as salt and adding masako (a seasoning comprised of salt, sugar and MSG) to food whenever they cook.

Table 11: Highest consumed food groups

Food group	% HHs consuming
Cereal	100%
Vegetables	100%
Spices, condiments, beverages	97%
Oils and fats	97%
Fish and other seafood	28%
Sweets	96%
White tuber and roots	44%

Food group	% HHs consuming
Meat	15%
Eggs	4%
Legumes, nuts and seeds	38%
Fruits	37%
Milk and milk products	15%

Fifty-two of 79 (66%) respondents reported no family members ate outside home during the previous 24 hours, while 27 (34%) respondents said that there are some members consuming from outside the home. This is predominantly due to some household members working away from home, and several respondents having traditional ceremonies in their suku during one week (Baucau). Family members are often expected to contribute to such events so it is reasonable to consider some sort of 'payment' is provided, and this percentage of people may be accessing purchased food.

A qualitative review of the data found that most respondents from the three municipalities were frequently consuming cereals and vegetables for lunch and dinner. Cereals eaten at breakfast were generally comprised of rice, corn and porridge. Vegetables consumed mostly included mustard, kangkung with papaya leaf, and pumpkin. Spices and condiments were mostly comprised of salt, masako, and pepper. Only a few households did not use oil for cooking. A few households were consuming fish including dry fish, mostly in Bobonaro. Sweets were consumed mostly as sugar for tea and coffee at breakfast and sometimes in afternoon snacks. Cassava, sweet potato and taro were eaten for breakfast and sometimes in afternoon snacks. Only a few households were consuming meat including organ meat and canned meat. Very few households were consuming eggs, mostly in Baucau, and just one household from Viqueque. For legumes, nuts, and seed, this primarily included tempe, tofu, or mixed rice and corn. A much larger proportion of respondents consumed legumes in Bobonaro (nearly 60%) compared with Viqueque and Baucau (around 20%). Fruits mainly include papaya and banana, which were predominantly reported in Baucau and Bobonaro. Milk and milk products were mostly consumed by children. More respondents in Baucau reported milk consumption (20%) than in Viqueque and Bobonaro (16% and 13% respectively).

Appendices

Appendix 1: Final sample

Municipality	Post Administrative	Suco	Aldeia	Treatment		Spillover			Comparison		Commodity
				# HH	# Respondent	# HH	# Respondent	FGD	# HH	Respondent	
Bobonaro	Bobonaro	Soileco	Ai-Aras			4	8				Shallot
Bobonaro	Bobonaro	Soileco	Soileco	1	2			1			Shallot
Bobonaro	Bobonaro	Atu-Aben	Atuaben	1	2			3			Shallot
Bobonaro	Bobonaro	Ilat-Laun	Ilat-Laun	1	2	2	4	4			Shallot
Bobonaro	Bobonaro	Ilat-Laun	Tunero			2	4				Shallot
Bobonaro	Maliana	Lahomea	Galusapuluh	1	2						Shallot
Bobonaro	Maliana	Saborai	Tazmasac						4	8	Shallot
Bobonaro	Maliana	Saborai	Cossal						4	8	Shallot
Bobonaro	Maliana	Lahomea	Lahomea	1	2	2	4				Mung bean
Bobonaro	Maliana	Lahomea	Aculaca			2	4				Mung bean
Bobonaro	Maliana	Odomau	Rai Maten	1	2						Mung bean
Bobonaro	Maliana	Ritabou	Samelaun	1	2						Mung bean
Bobonaro	Maliana	Raifun	Raifun Vila	1	2	4	8	7			Mung bean
Bobonaro	Maliana	Holsa	Solugolo						8	16	Mung bean
Baucau	Baucau	Uailili	Uaimanuboe	1	2						Shallot
Baucau	Baucau	Buruma	Soli-Ua	1	2	3	6				Shallot
Baucau	Baucau	Buruma	Ono-Sere			1	2				Shallot
Baucau	Venelale	Uatu Haco	Uatu Uasa	1	2	2	4				Shallot
Baucau	Venelale	Uailaha	Luha Oli	1	2	2	4				Shallot
Baucau	Venelale	Uailaha	Caubai					7			Shallot
Baucau	Venelale	Bado-Hoo	Uma Ana Ico						8	16	Shallot
Viqueque	Viqueque	Uma Quic	Macadean	1	2	3	6	8			Mung bean
Viqueque	Viqueque	Fatudere	Culale	1	2	2	4				Mung bean
Viqueque	Viqueque	Uma Uain Leten	Lialura	1	2	2	4				Mung bean
Viqueque	Viqueque	Uma Uain Craic	Cailoi	1	1	1	2				Mung bean
Viqueque	Viqueque	Bahalarauain	Aisahe						2	4	Mung bean
Viqueque	Viqueque	Bahalarauain	Welaco						2	4	Mung bean
Viqueque	Viqueque	Bahalarauain	Aidac						4	8	Mung bean
TOTAL				**16**	**31**	**32**	**64**	**30**	**32**	**64**	
Total household:	**80**										
Total respondent:	**159**										

Appendix 2: Survey templates

Questionnaire number:_____
Enumerator do not complete: for office use only

T1: Family agricultural household survey (men)

BASELINE

Enumerator details:
Name: _____ _____
Date of interview: _____
Time of interview: Start time _____ End time _____
Verification details
Name: _____ _____

CONSENT FORM

I, _____(name) consent to participate in this family agricultural household survey. The enumerator _____(name) has explained to me the purpose of the survey and I understand that my responses will be only used by the TOMAK program and my personal details will not be shared with anyone. I understand I am not obligated to participate and can stop the survey process at any time, with no consequences.

Agree: _____

I, _____(name) consent to the TOMAK program contact me in the future for other surveys. I understand this does not obligate me to participate in anyway.

Agree: _____

SECTION A: OBSERVATIONAL

Information for interviewer. Please answer these questions yourself, by observation only (not by asking the respondent)

A1. Municipality
- Bobonaro
- Baucau
- Viqueque

A1.1 Post Administrative
A2. Suco
A2.1 Aldeia

A3. Gender of the respondent
- Female
- Male

A4. Has this respondent been involved in the demo plot?
- Treatment group
- Spill over group
- Comparison group

Enumerator: You can respond to this directly – please select one option only

SECTION B: PERSONAL DETAILS

B1. Can you tell me your name?
_____ _____

Enumerator: Give the respondent the option to remain anonymous. If they wish to remain anonymous, leave this blank.

B2. Would you be able to tell me your contact telephone number?

_____ ____

Enumerator: Give the respondent the option to not share their contact details. If they have no telephone, leave this blank.

B3. Can you tell me how old you are?

- 15-24
- 25-34
- 35-44
- 45-54
- 55 and above

Enumerator: Use the age provided by the respondent. If respondent is unable to provide their age, ask the year of their birth and calculate based on that. If that is not possible, ask if you can check their identification card or electoral card.

B4. How many people live in your household, including yourself? *Enumerator: Please only include those people that live permanently in the house.*

- Nine or more
- Eight
- Seven
- Six
- Five
- Four
- Three
- One or two

B5. Are all household members ages 8 to 17 currently attending school?

- No, or no members ages 8 to 17
- Yes

B6. What is the highest level and class that the male head/spouse has completed in school?

- None, pre-school or primary class 1
- Primary class 2 to 5
- Primary class 6 to pre-secondary class 2
- No male head/spouse
- Pre-secondary class 3, or higher

B7. What was the main occupation of the male head/spouse in the past 12 months?

- No male head/spouse
- Agriculture and animal husbandry (farming), forestry, fishing, or hunting
- Does not work
- Others

B8. What is the main construction material of the external walls?

Enumerator: You can observe and record this.

- Mud, wood, bamboo, rattan, tin or other
- Brick, concrete, or unbaked brick

B9. What is the primary material of the floor?

Enumerator: You can observe and record this.

- Earth, clay, wood, bamboo or other
- Concrete/brick, floor tile/cement, marble/ceramic

B10. What is the primary material of the roof?

Enumerator: You can observe and record this.

- Leaves or other
- Metal sheets/zinc, concrete, wood, tile or sugar palm fibre

B11. Does the household own any televisions, tape players/CD players or radios?

- Yes
- No

B12. How many clothes cupboards does the household own?

- None
- One
- Two or more

B13. How many square-metres of land does the household cultivate (or has or controls, even if the land does not belong to the household) that is for annual crops or fallow, tree crops, pasture, plantation, grassland, or garden/garden plot?

- None
- to 0.149 hectares
- 0.150 to 0.299 hectares
- 0.299 to 0.5 hectares
- 0.5 to 0.99 hectares
- or more hectares

SECTION C: MARKET SYSTEMS BASELINE

C1. From the land you mentioned before, who owns the land? *Enumerator: This refers to the whole land mentioned in the last section, including land that is not currently being cultivated*

- Rent free
- Owned without número referénsia or certificate
- Owned with número referénsia
- Communal land
- Owned, certificate from Indonesia
- Rent and share product
- Owned, certificate from Portuguese
- Lease/rent for fixed value

C2. Do you use all of this land to grow crops?

- Yes
- No

C3. If not, how much do you use? *Enumerator, select from the code below. Respondents may have difficulty with this question. If so, please use the drawing to estimate the percentage.*

code

- 0%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%

C4. In the last year, what crops did you grow?

- Mung bean
- Shallot
- Upland rice
- Lowland rice
- Corn
- Red bean
- Peanut
- Vegetable
- Maize
- Cassava
- Sweet potato
- Coffee
- Coconut
- Fruit
- Other

C5. In the last year, what crops did you grow most? Enumerator: For this question, we are looking for a ranking from the responses on the previous question. First, ask the farmers which was the biggest crop. Then ask which was the next biggest crop. Continue like this until the farmer is finished. If they didn't grow a crop, leave this response open.

- Mung bean
- Shallot
- Upland rice
- Lowland rice
- Corn
- Red bean
- Peanut
- Vegetable
- Maize
- Cassava
- Sweet potato
- Coffee
- Coconut
- Fruit
- Other

C5. In the last year, how much (what proportion) of your total land did you use for each crop? *Enumerator, select from the code below. Respondents may have difficulty with this question. If so, please use the drawing approach to estimate the percentage.*

- 0%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%

C7. Over the last year, how many harvests did you have from your crops?

- Mung bean_____
- Shallot_____
- Upland rice_____
- Lowland rice____
- Corn_____

- Red bean_____
- Peanut_____
- Vegetable_____
- Maize_____
- Cassava_____
- Sweet potato___
- Coffee_____
- Coconut_____
- Fruit_____
- Other_____

C8. How much did you harvest for each crop? Enumerator: this is included total harvest

Which measure is used for harvesting each crop?

- Bucket 5kg
- Oil can 15Kg
- Rice sack 25kg
- Rice sack 30kg

How many units of this measure did you harvest?

C9. In the last year, of the crops that you harvested, which crops did you sell?

- Mung bean
- Shallot
- Upland rice
- Lowland rice
- Corn
- Red bean
- Peanut
- Vegetable
- Maize
- Cassava
- Sweet potato
- Coffee
- Coconut
- Fruit
- Other

C10. What were the main three crops you sold? Enumerator: Only select 3 crops (maximum)

- Mung bean
- Shallot
- Upland rice
- Lowland rice
- Corn
- Red bean
- Peanut
- Vegetable
- Maize
- Cassava
- Sweet potato
- Coffee
- Coconut
- Fruit
- Other

C11. Enumerator, help the respondent estimate the answers to the following questions on selling of crops, (apply for each crop selling).

From your harvested, how many did you sell?

- Bucket 5kg
- Painting bucket 12kg
- Oil can 15kg
- Rice sack 25kg

- Rice sack 30kg

How many units did you sell? _____

Which measure is used for selling?
- Milk can
- Fruit can
- Pork can
- Small glass
- Medium glass
- Small cup
- Big cup
- Milk can SGM
- Bowl
- Bunch
- Bucket 5kg
- Painting bucket12kg
- Oil can 15kg
- Rice sack 25kg
- Rice sack 30kg

What is the average price of one unit of the measure? _____

C12. From all the crops that you sold, how did you use these? Enumerator, use the drawing approach with the farmer to help estimate the percentage of crops that was SOLD, CONSUMED, DONATED or USED FOR SEEDS.
How much did you manage to sell? _____
How much did you/your family consume? _____
How much was wasted or donated? _____
How much was used for seeds? _____

C13. Enumerator: The total percentage on the previous four questions is ${C8_1} + ${C8_2} + ${C8_3} + ${C8_4} = ${total percentage} %. If the total of your responses does not equal 100%, review the responses before proceeding.
- OK

C14. How do you normally sell your products?
- I normally sell directly to consumers
- I normally sell to someone who sells my products

C15. Where do you normally sell your products?
- Suco market
- Sub-district market
- District market
- Market in another district

***C16.* What type of costs did you incur to grow your crops? Enumerator: You can select more than one response from the list below.**
- Seeds
- Manure
- Pesticides
- Equipment(rental/buying)
- Land
- Labor
- Other
- No costs

C17. In total, how much did you spend on these costs over the last year?

- 0$
- 0-5$
- Between $5-$10
- Between $10-30
- Between $30-50
- Between $50-$100
- Between $100-200
- More than $200
- Don't know

C18. What are the main constraints you face on your farm during preparation / growing time?
Enumerator: You can select more than one response from the list below

- Access to input
- Disease management
- Irrigation
- Weather conditions
- Labour / farmhand shortage
- Other

C18.1 Please describe the constraint/s you faced:
.....
.....

C19. What are the main constraints you face on your farm during harvest and post-harvest time?
Enumerator: You can select more than one response from the list above

- Labour / farmhands
- Storage
- Processing (if any)
- Access to market
- Other

C19.1 Please describe the constraint/s you faced:
.....
.....

C20. During the last year, did you receive any support for your farming? *Enumerator: If "No", skip to Question C21*

- Yes
- No

C20.1 Where did you receive the most support from?

- Government extension workers
- Input supplier
- Traders
- Credit providers
- NGOs
- Other farmers
- Radio/TV
- Other

C20.1 **What type of support did you receive?** *Enumerator: You can select more than one response*

- from the list above.
- Training
- Farm equipment
- Seeds
- Information materials
- Market information
- Other

C20.1 In the last year, how often did you receive this support?

- Once
- Twice
- Three-four times
- Every month
- I didn't receive this support last year

C20.1 What was the effect on your farm?

- No benefit
- Small benefit
- Large benefit
- I don't know

C20.2 During the last year, did you receive any other support for your farming? *Enumerator: If "No", skip to Question C32.*

- Yes
- No

C20.2 If yes, where did you receive this support from? *Enumerator: select one option only*

- Government extension workers
- Input supplier
- Traders
- Credit providers
- NGOs
- Other farmers
- Radio/TV
- Other

C20.2 What type of support did you receive? *Enumerator: You can select more than one response from the list above.*

- Training
- Farm equipment
- Seeds
- Information materials
- Market information
- Other

C20.2 How often did you receive this support?

- Once
- Twice
- Three-four times
- Every month
- I didn't receive this support last year

C20.2 What was the effect on your farm?

- No benefit
- Small benefit
- Large benefit
- I don't know

C20.3 During the last year, did you receive any other support for your farming?

- Yes
- No

C20.3 If yes, where did you receive this support from? *Enumerator: select one option only*

- Government extension workers
- Input supplier
- Traders
- Credit providers
- NGOs

- Other farmers
- Radio/TV
- Other

C20.3 What type of support did you receive? *Enumerator: You can select more than one response from the list above.*
- Training
- Farm equipment
- Seeds
- Information materials
- Market information
- Other

C20.3 In the last year, how often did you receive this support?
- Once
- Twice
- Three-four times
- Every month
- I didn't receive this support last year

C20.3 What was the effect on your farm?
- No benefit
- Small benefit
- Large benefit
- I don't know

C21. On your farm, do you currently use:
- Retained seeds
- Mulching
- Plastic for weed control
- Irrigation (bucket)
- Drip irrigation
- Flood irrigation
- Hose irrigation
- Covered cropping
- Low tunnels
- Burning
- Composting
- Crop rotation
- Use seedling nursery
- Raised beds
- Inoculum
- Inorganic fertilisers
- Inorganic pesticides
- Organic fertilisers
- Organic pesticides
- Leaving crop residue on surface

Enumerator: Questions C22 – C28 are for farmers growing mung bean or shallot. Please pick which crop and respond to the questions. If they do not work on these crops, please go to question C29.

C22. Do you grow mung bean or shallot?
- Yes
- No

C23. How many days do you work on mung bean/shallot production each year?
C23.1 Preparing the land_____
C23.2 Planting the seeds_____
C23.3 Transplanting_____
C23.4 Watering the plants_____

C23.5 Applying fertiliser_____
C23.6 Applying pesticides_____
C23.7 Weeding_____
C23.8 Harvesting the crop_____
C23.9 Travelling to the farm (if not close by the house) _____
C23.10 Selling the produce_____
Enumerator: Please work through the list and put the total number of days against each line. If they are not involved in a particular stage, put '0'.

C24. How many days does your spouse work on mung bean/shallot production each year?
C24.1 Preparing the land_____
C24.2 Planting the seeds_____
C24.3 Watering the plants_____
C24.4 Transplanting_____
C24.5 Applying fertiliser_____
C24.6 Applying pesticides_____
C24.7 Digging and weeding_____
C24.8 Harvesting the crop_____
C24.9 Travelling to the farm to work_____
C24.10 Selling the produce_____
Enumerator: Please work through the list and put the days against each line. If they are not involved in a particular stage, put '0'.

C25. Do you sons work on mung bean/shallot production?
- Yes
- No

C26. If yes, when do they work on this? *Enumerator: Select each option that applies.*
- Preparing the land
- Planting the seeds
- Watering the plants
- Transplanting
- Applying fertiliser
- Applying pesticides
- Digging and weeding
- Harvesting the crop
- Travelling to the farm to work
- Selling the produce

C27. Do you daughters work on mung bean/shallot production?
- Yes
- No

C28. If yes, when do they work on this? *Enumerator: Select each option that applies.*
- Preparing the land
- Planting the seeds
- Watering the plants
- Transplanting
- Applying fertiliser
- Applying pesticides
- Digging and weeding
- Harvesting the crop
- Travelling to the farm to work
- Selling the produce

C29. How much input did you have in making decisions about farming (production)?
- No input
- Input into very few decisions
- Input into some decisions
- Input into most decisions

- Input into all decisions
- No decision makes

C30. Who receives and manages the income generated from crop sales?

- I manage the income from mung bean / shallot
- My spouse manages the income from mung bean / shallot
- Other

C30.1 If other, who? _____

C31. How much input did you have in decisions on the use of income generated from crop production?

- No input
- Input into very few decisions
- Input into some decisions
- Input into most decisions
- Input into all decisions
- No decision makes

C32. How much of your income do you reinvest in next season of crop production?

- Most of it
- Half of my income
- A small portion of my income
- Only a very small amount of my income
- None

NOTE_____

Questionnaire number:_____
Enumerator do not complete: for office use only

T1: Household survey (women)
BASELINE

Enumerator details:
Name: _____ _____
Date of interview: _____
Time of interview: Start time _____ End time _____
Verification details
Name: _____ _____

CONSENT FORM

I, _____(name) consent to participate in this family agricultural household survey. The enumerator _____(name) has explained to me the purpose of the survey and I understand that my responses will be only used by the TOMAK program and my personal details will not be shared with anyone. I understand I am not obligated to participate and can stop the survey process at any time, with no consequences.

Agree: _____

I, _____(name) consent to the TOMAK program contact me in the future for other surveys. I understand this does not obligate me to participate in anyway.

Agree: _____

SECTION A: OBSERVATIONAL

Information for interviewer. Please answer these questions yourself, by observation only (not by asking the respondent)

		CODE
A1.	**District**	
	Bobonaro	1
	Baucau	2
	Viqueque	3
A2.	**Suku/aldeia**	
	Odomau/Raimaten	1
	Raifun/Raifun Vila	2
	Ritabou/Samelaun	3
	Lahomea/Lahomea	4
	Lahomea/Galusapulu	5
	Ilat laun/Ilat laun	6
	Atuaben/Atuaben	7
	Soilesu/Soilesu	8
	Quic/Fatuhadan	9
	Uma uain leten/Lialura	10
	Uma Wain Craic/Cailoi	11
	Fatudere/Culale	12
	Uailili/Uaimanuboe	13
	Buruma/Suliua	14
	Uailaha/Luhaoli	15
	Uatuhaco/Uato-Uassa	16
A3.	**Gender of the respondent**	
	Female	1
	Male	2

A4. Has this respondent been involved in the demplot?

Treatment group 1
Spillover group 2
Comparison group 3
Enumerator: You can respond to this directly.

SECTION B: PERSONAL DETAILS

B1. Can you tell me your name?

_____ ____

Enumerator: Give the respondent the option to remain anonymous. If they wish to remain anonymous, leave this blank.

B2. Would you be able to tell me your contact telephone number?

_____ ____

Enumerator: Give the respondent the option to not share their contact details. If they have no telephone, leave this blank.

B3. Can you tell me how old you are?

15-24 1
25-34 2
35-44 3
45-54 4
55 and above 5
Enumerator: Use the age provided by the respondent. If respondent is unable to provide their age, ask the year of their birth and calculate based on that. If that is not possible, ask if you can check their identification card or electoral card.

SECTION C: MARKET SYSTEMS BASELINE

C17. During the last year, did you receive any support for your farming?

Yes 1
No 2
Enumerator: If "No", skip to Question C32.

C18. If yes, where did you receive the most support from?

Government extension workers 1
Input supplier 2
Traders 3
Credit providers 4
NGOs 5
Other farmers 6
Radio/TV 7
Other 8
Enumerator: select one option only

C19. What type of support did you receive?

Training 1
Farm equipment 2
Seeds 3
Information materials 4
Market information 5
Other 6
Enumerator: You can select more than one response from the list above.

C20. In the last year, how often did you receive this support?

Once 1

Twice 2
Three-four times 3
Every month 4
I didn't receive this support last year 5

C21. What was the effect on your farm?
No benefit 1
Small benefit 2
Large benefit 3
I don't know 4

C22. During the last year, did you receive any other support for your farming?
Yes 1
No 2
Enumerator: If "No", skip to Question C32.

C23. If yes, where did you receive this support from?
Government extension workers 1
Input supplier 2
Traders 3
Credit providers 4
NGOs 5
Other farmers 6
Radio/TV 7
Other 8
Enumerator: select one option only

C24. What type of support did you receive?
Training 1
Farm equipment 2
Seeds 3
Information materials 4
Market information 5
Other 6
Enumerator: You can select more than one response from the list above.

C25. In the last year, how often did you receive this support?
Once 1
Twice 2
Three-four times 3
Every month 4
I didn't receive this support last year 5

C26. What was the effect on your farm?
No benefit 1
Small benefit 2
Large benefit 3
I don't know 4

C27. During the last year, did you receive any other support for your farming?
Yes 1
No 2

C28. If yes, where did you receive this support from?
Government extension workers 1
Input supplier 2
Traders 3
Credit providers 4
NGOs 5
Other farmers 6

Radio/TV 7
Other 8
Enumerator: select one option only

C29. What type of support did you receive?
Training 1
Farm equipment 2
Seeds 3
Information materials 4
Market information 5
Other 6
Enumerator: You can select more than one response from the list above.

C30. In the last year, how often did you receive this support?
Once 1
Twice 2
Three-four times 3
Every month 4
I didn't receive this support last year 5

C31. What was the effect on your farm?
No benefit 1
Small benefit 2
Large benefit 3
I don't know 4

C32. On your farm, do you currently use:
Retained seeds ..... y/n
Mulching ..... y/n
Plastic for weed control ..... y/n
Irrigation (baldi) ..... y/n
Drip irrigation ..... y/n
Flood irrigation ..... y/n
Hose irrigation ..... y/n
Covered cropping ..... y/n
Low tunnels ..... y/n
Burning ..... y/n
Composting ..... y/n
Crop rotation ..... y/n
Use seedling nursery ..... y/n
Raised beds ..... y/n
Inoculum ..... y/n
Inorganic fertilisers ..... y/n
Inorganic pesticides ..... y/n
Organic fertilisers ..... y/n
Organic pesticides ..... y/n
Leaving crop residue on surface ..... y/n

Enumerator: Questions C32 – C37 are for farmers growing mung bean or shallot. Please pick which crop and respond to the questions. If they do not work on these crops, please go to question C38.

C33. How many days do you work on mung bean/shallot production each year?
Preparing the land ..... ___
Planting the seeds ..... ___
Transplanting ..... ___
Watering the plants ..... ___
Applying fertiliser ..... ___
Applying pesticides ..... ___
Weeding ..... ___

Harvesting the crop ..... ___
Travelling to the farm (if not close by the house) ..... ___
Selling the produce ..... ___
Don't know ..... ___
Enumerator: Please work through the list and put the total number of days against each line. If they are not involved in a particular stage, put '0'.

C34. How many days does your spouse work on mung bean/shallot production each year?
Preparing the land ..... ___
Planting the seeds ..... ___
Watering the plants ..... ___
Transplanting ..... ___
Applying fertiliser ..... ___
Applying pesticides ..... ___
Digging and weeding ..... ___
Harvesting the crop ..... ___
Travelling to the farm to work ..... ___
Selling the produce ..... ___
Enumerator: Please work through the list and put the days against each line. If they are not involved in a particular stage, put '0'.

C35. Do you sons work on mung bean/shallot production?
Yes 1
No 2

C36. If yes, when do they work on this?
Preparing the land 1
Planting the seeds 2
Watering the plants 3
Transplanting 4
Applying fertiliser 5
Applying pesticides 6
Digging and weeding 7
Harvesting the crop 8
Travelling to the farm to work 9
Selling the produce 10
Enumerator: Select each option that applies.

C37. Do you daughters work on mung bean/shallot production?
Yes 1
No 2

C38. If yes, when do they work on this?
Preparing the land 1
Planting the seeds 2
Watering the plants 3
Transplanting 4
Applying fertiliser 5
Applying pesticides 6
Digging and weeding 7
Harvesting the crop 8
Travelling to the farm to work 9
Selling the produce 10
Enumerator: Select each option that applies.

C39. How much input did you have in making decisions about farming (production)?
No input 1
Input into very few decisions 2
Input into some decisions 3
Input into most decisions 4

Input into all decisions 5
No decision make 6

C40. Who receives and manages the income generated from crop sales?
I manage the income from mung bean / shallot 1
My spouse manages the income from mung bean / shallot 2
Other 3

If other, who? ..... _____

C41. How much input did you have in decisions on the use of income generated from crop production?
No input 1
Input into very few decisions 2
Input into some decisions 3
Input into most decisions 4
Input into all decisions 5
No decision make 6

SECTION D

Please describe the foods (meals and snacks) that you ate drank yesterday during the day and night, whether at home or outside the home.

Enumerators: Please first discuss meals with the respondent and make notes on the table, compare with the list of group foods, then circle Yes or No from Q1 – Q16.

D1. Cereals
1. No
2. Yes

D2. White roots and tubers
1. No
2. Yes

D3. Vitamin a rich vegetables and tubers
1. No
2. Yes

D4. Dark green leafy vegetables
1. No
2. Yes

D5. Other vegetables
1. No
2. Yes

D6. Vitamin a rich fruit
1. No
2. Yes

D7. Other fruits
1. No
2. Yes

D8. Organ meat
1. No
2. Yes

D9. Flesh meat
1. No
2. Yes

D10. Eggs
1. No
2. Yes

D11. Fish and seafoods
1. No
2. Yes

D12. Legumes, nuts, and seeds
1. No
2. Yes

D13. Milk and milk products
1. No
2. Yes

D14. Oils and fats
1. No
2. Yes

D15. Sweets
1. No
2. Yes

D16. Spices, condiments, beverages
1. No
2. Yes

D17. Did you or anyone in your house eat anything (meal or snacks) outside the home yesterday?
1. No
2. Yes

D20. From the food you mentioned in the last 24 hours, how much did you buy from outside the home?
Most of the food was bought from outside 1
Half of the food was bought from outside 2
We bought a little bit of food from outside 3
Most of the food was from our farm 4

D22. Who makes decisions on which food to prepare for your family?
I make the decisions on food 1
My husband makes the decisions on food 2
My husband and I make decisions on food together 3
My mother makes decisions on food 4
Another family member makes the decisions on food 5

Appendix 3: Focus group discussions: Question outline

FARMING HOUSEHOLDS
Focus Group Discussion

Name of FGD: _____ Administrative post:_____
Date: _____ Suku:_____
Municipality:_____ Aldeia:_____

Name	Age
P1	
P2	
P3	
P4	
P5	
P6	
P7	
P8	

Enumerator: Complete the table as the respondents introduce themselves

FGD Minutes

1. Production process for shallot/mung bean

• What is the process for planting this crop (shallot/mung bean)?
• What are men and women's roles in planting and harvesting this crop?
• Who invests the most time during the production process (from planting to harvest)
• What is the most time-consuming part of the process? Is there any way this could be reduced?
• Who makes the decisions about improving or changing production methods? Are you involved in this decision?
• Who makes the decisions about buying something needed to produce this crop? (e.g. seeds, equipment, etc.)
• How is labour organised to produce this crop (e.g. with family, through a women's group, with another group)?
• After harvest, who decides what happens with the harvest (e.g. sale, home consumption or save for seeds)?
• What is the biggest challenge you face when producing shallot/mung bean? Why do you think that happens?

2. Access to support services

• Have you received assistance/support/information from the government, NGOs, or other agencies?
• If you have received assistance, what kind of support was this and did it benefit you?
• Is there some assistance that you haven't received yet but which you feel could help increase your production?

3. Access to land

• Can you explain who owns this land? If this is your husband/wife, do you also feel like the owner of this land?
• How long have you used this land?
• And you are able to keep using this land in the future?
• If in the future, you can't use this land, who will own or use it then?
• If you don't own the land you are using, how have you arranged to access it for farming? (Is this arrangement secure, long-term or for a short time only)

• Do you make the decisions about how to use this land for farming? If not, who makes this decision?

4. Access to money

• In your family, who manages the money?
• Who decides what to spend money on?
• How do you decide whether to use money for cultural giving/ceremonies or household necessities? Who makes this decision? If you don't agree with a decision, are you able to say so?

5. Aspirations and closing

• What is your dream for your life and for your family?
• Before we close this discussion, do you have any questions for us?

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