PRISMA Promoting Rural Income through Support for Markets in Agriculture

Kementerian PPN/ Bappenas

Australian Aid

Longitudinal Livelihood Study (LLS)

Baseline Report on Maize Sub-Sector in Sumenep

January 2016

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LONGITUDINAL LIVELIHOOD STUDY

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List of Abbreviation and Expressions

Abbreviations

Obs	Observation
SD	Sekolah Dasar (Primary School)
SMP	Sekolah Menengah Pertama (Junior High School)
SMA	Sekolah Menengah Atas, (Senior High School),
SMK	Sekolah Menengah Kejuruan (Vocational High School)
UBSP	Unit Bersama Simpan Pinjam (Small Savings and Borrowings Group)
UPK	Unit Pengelola Kagiatan ((Government) Activity Managing Units)
VCR	Videocassette Recorder
VCP	Videocassette Player
VCD	Video Compact Disc

Expressions

Adat	Local traditions
Angkot	Car for public transportation
Arisan	Group-based rotating savings and lending fund
Desa	Village
Koperasi,	Cooperative
Lebaran	Islamic celebration in July 2015
Naik Haji	Hajj pilgrimage
Ojek	Motorcycle for public transportation)
Pasar	Local traditional market
Warung	Local shop/ restaurant

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1 Introduction

This baseline report is part of a study, which aims to gain a deeper understanding on how targeted households use additional income generated through the PRISMA intervention. Sumenep is one of many districts in East Java that has been targeted by PRISMA and where the project tries to alleviate poverty. PRISMA supports maize farmers by promoting hybrid seed for dry land farming. The goal is to increase the productivity of maize and therefore increase the income of maize farmers. The goal of this longitudinal livelihood study (LLS) is to gain a deeper understanding on how the maize farmers use their additional income anticipated to be generated through the intervention. This will run until the end of the program. The households interviewed during this year will be tracked during the following years to see how their livelihood situation has changed and how the changes relate to the intervention. Such a study is important for PRISMA because it helps assess whether targets selected for raising rural income are reasonable and how it can affect rural livelihoods.

The goal of this baseline report is to give an overview over the current livelihood situation to see in later stages how this situation changed. The report provides an overview with special focus on income generation and use of income. The baseline study uses a mixed method approach including the collection of both qualitative and quantitative data. 197 households were interviewed for quantitative data collection with a questionnaire and nine respondents were interviewed for qualitative data collection through semi-structured interviews. Together this data provides a picture of the current livelihood situation of the farmers. The same households will be interviewed in coming years as part of the next waves of the LLS.

The baseline report initially provides a short overview over the intervention (Section 2); with the frame sampling for the study discussed in Section 3; the five assets of the sustainable livelihood framework are described in Section 4; with a discussion of income generation discussed in Section 5). Section 6 describes expenditure; while Section 7 focuses on use of income generated by coconut earnings. Section 8 discusses seasonality and vulnerability of the households, with conclusions provided in Section 9.

2 Short Description Intervention

2.1 Sumanep

Sumenep is a district in the province of East Java and lies on the island Madura. For the year 2013 the district reported that 29.2% of the people were poor which corresponds to 300,700 poor people (Statistic Agency Center, 2014). Within East Java, Sumenep ranks 32 out of 39 districts with respect to the Human Development Index and has a score of 66.89 Statistic Center Agency (2016). Besides, life expectancy in Sumenep is 65.25 years and average years of schooling is 6.37 years for boys and 4.62 years for girls (2013 data) (Statistic Center Agency, 2014; Statistic Center Agency, 2014). Literacy rates lie at 85.07% for the 2012 (Statistic Agency Center, 2015). According to the intervention plan (Internal PRISMA document, 2014), Sumenep has 179'945 farmers with 29'656 farmers classified as poor farmers. Moreover, 19.1% of those under-five years old were reported undernourished (weight for age) and 35.8% of the under-five years were

reported stunted (height for age) in East Java for the year 2013 (Statistics Centre Agency, health profile, 2014).

2.2 Intervention Summary

Context

Globally maize production is increasing and over 1 billion tons of maize were produced in 2013. USA and China are the dominating countries for maize production and together produce around half of the global maize supply. USA is known to be the largest maize exporter followed by Brazil. Japan and the European Union are large importers. (Food and Agricultural Organization, 2015). Indonesia is one of the ten largest maize producers globally and around 18 million tons maize were produced in 2013 while ca. 3.8 million hectares were harvested (Data Center and Agricultural information System, 2013) (internal PRISMA report). Indonesia exports and imports maize depending on seasonality but is net importer. India and Argentina are important partners for import while overall imports are highly volatile in amount. (Food and Agricultural Organization, 2015).

Maize demand in Indonesia has been increasing rapidly due to the increasing demand for poultry (where maize is a key ingredient in poultry feed). Household consumption per capital is around 1.18 kg maize per year. Average productivity of maize production in Indonesia is 4.9 tons per hectare. (Sector Report) (Data Center and Agricultural information System, 2013). The province with the largest maize production in Indonesia is East Java (Statistic Center Agency, 2014) . Within East Java, Sumenep district is an important maize producer – with some 359,000 tons of maize produced in 2013. However, the productivity of maize production in Sumenep is relatively low, at 2.65 tons per hectare which is below the average productivity of East Java of 4.80 tons per hectare.

There are several reasons why the productivity in Madura Island and especially in Sumenep is low. Firstly, low-yielding local seed varieties are used which are less productive than hybrid seed. Secondly, farmers often apply the fertilizer incorrectly. Thirdly, dry soil conditions are not managed properly with irrigation systems, which is especially crucial for production in the dry season. A further problem is that poor post-harvest practices are applied so that the harvested maize gets contaminated with foreign material and often contains too much moisture, resulting in deterioration in quality and lower selling prices.

Intervention

PRISMA's intervention seeks to increase productivity amongst the small-holder farmers in Sumanep. The intervention is implemented in three phases. Firstly, higher productivity is targeted with improved seeds; secondly, productivity is increased through better post-harvest technologies and fertilizer; and, in the third phase the introduction of irrigation systems shall increase productivity.

In the case of promoting the use of improved/hybrid seed PT AHSTI is the key commercial partner. While the company sells the technologies that can improve productivity (hybrid seeds), it has not been very successful in promoting improved seeds in Sumanep and other areas of East Java. The intervention seeks to promote the seeds as well as associated training for distributors. In addition to this, PRISMA collaborates with PT AHSTI to provide training and assistance for farmers during the transition phase between planting local seed and hybrid seed. The seeds will be partly paid by the farmers directly and partly will be paid later (form of credit).

Moreover, PT AHSTI will create networks for buyers (e.g. Poultry farmers, feed-millers, traders) to facilitate the selling of the seeds.

The intervention seeks to distribute hybrid seed through farmer groups. For this purpose, PRISMA together with PT AHSTI approach active farmer groups. Active farmer groups in this context means that they are active in their representation of the farmers. While PT AHSIT sells hybrid seeds to the farmer groups, they sell the seeds on to the farmers. The farmer groups therefore can be seen as intermediate actor in the supply chain for improved inputs.

3 Sampling

3.1 Sampling Quantitative

The study used both qualitative and quantitative sampling in order to provide the data provided below. The sample frame was drawn from internal PRISMA documents – with projections on the potential target groups. The study draws from 197 respondents from a target of 200 – only x3 respondents were dropped as the data collected was incomplete. The highest number of respondents from a single village was 34 and lowest 4, the average number of respondents was 18.

Table 1: Sampling of Quantitative Data Collection

A10	No.
Babbalan	20
Batu Dinding	25
Bilapora Timur	20
Kasengan	34
Kebundadap Timur	15
Kopedi	20
Manding Timur	19
Moncek Tengah	20
Sarokah	4
Totosan	20
Total	197

3.2 Sampling Qualitative

For the qualitative data collection, the same list of respondents was used as for the quantitative data collection. Out of the villages available for quantitative data collection five villages were chosen for qualitative data collection. One or two respondents were chosen in the villages which yielded the sampling shown in table 2. The data was collected from 4 to 9 November 2015.

Table 2: Sampling of Quantitative Data Collection

Name of Desa	**Number of respondent**

Bilapora Timur	1
Babbalan	2
Moncek Tengah	2
Kopedi	2
Kebondadap Timur	2

3.3 Intervention status in the Villages

The intervention has commenced in 6 of the 9 villages under the study. 9 farmer groups are involved in the intervention. Data was collected in November 2015.

Table 3: Current Status of the Intervention per Village

Kecamatan	Desa	Intervention status	Number of farmer groups involved in intervention	Name of farmer groups
Batuan	Babbalan	No	0	
Gapura	Batu Dinding	Yes	1	
Ganding	Bilapora Timur	Yes	2	1) Joyo Mulyo 2) Opelan Jaya
Saronggi	Saroka	Yes	1	1) Suka Maju
	Kebun Dadap Timur	Yes	1	2) Taruna Tani
Bluto	Kopedi	Yes	1	1) KWT Taman Sari
Manding	Kasengan	No	0	
	Manding Timur	No	0	
Lenteng	Moncek Tengah	yes	1	1) Subur
Batang Batang	Totosan	Yes	2	1) KWT Anggrek 2) Sentosa

Source: PT AHSTI

3.4 Poverty Rate of Households using PPI

The Poverty Rate of Households using PPI is given below:

Table 4: Poverty Rate of Households using PPI

	Nr. Obs	mean
100% National Poverty Rate	155.00	9.48
150% National Poverty Rate	155.00	42.30
$2.5 2005 PPP Poverty Rate	155.00	74.27

4 Five Livelihood Assets

The discussion of five livelihood assets of the sustainable livelihood framework gives a good overview over the resources that are available to a household (DFID, 1999). The assets are classified in five categories which are human assets, physical assets, natural assets, social assets, and financial assets.

To understand how these various assets change with wealth level, a wealth variable was constructed based on total expenditure per capita. As the questionnaire contains scope for detailed information on expenditure, total expenditure per capita were calculated. This total expenditure per capita were divided into quintiles which provides information on household expenditure per capita level. As will be discussed later, these quintiles then were used to split the sample and understand information about different quintile levels.

As seen in table 5, the first quintile contains household which spent 193'222 until 396'533 IDR per capita and per month with the mean of 328'912 IDR. The households in the highest expenditure quintile spent on average 1'557'030 IDR.

Table 5: Per Capita Expenditure per Quintile in Rp. per Month

	Nr. Obs	Mean	Sd	Min	Max
Q1	37.00	328,011.74	49,446.83	193,222.22	396,533.31
Q2	36.00	464,549.17	37,792.70	400,305.53	537,916.63
Q3	37.00	634,447.01	54,087.71	548,416.63	706,966.63
Q4	36.00	789,443.31	52,424.34	711,805.56	913,750.00
Q5	36.00	1,557,029.56	740,344.44	930,955.56	4,432,291.50

4.1 Human Assets

Human assets describe assets which lie with the person or household itself. This might be health, education or other household characteristics. This sub-section first focuses on household characteristics and then on education.

4.1.1 Household Characteristics

The number of households is also categorised as human assets because it determines the labour force in the household. In the sample the average number of household members is 4.1 (see table 6). The smallest households report two household members and the largest reports nine household members. The average number of children in this household is 1.0 with some households that have no children at all and others which have up to three children. The average number of elderly people is 0.4. The number of elderly and children in a household indicates the burden on active household members to support their household.

Table 6: Household Characteristics

	Nr. Obs	mean	Sd	Min	Max
Hh size	197.00	4.06	1.40	2.00	9.00
Nr children	197.00	1.02	0.88	0.00	3.00
Nr elderly	197.00	0.38	0.69	0.00	3.00

According to table 7, the average number of female and male household member in the household is even and the average age household member has 34.7 years. Households are overwhelmingly male-headed. As can be seen in table 8, only 1.1% of the households are reported as female-headed.

Table 7: Household Member Characteristics

	Nr. Obs	Mean
Female	788.00	0.50
Age	796.00	34.73

Table 8: Female-headed households

	Nr. Obs	Percent
female headed	186.00	1.08

4.1.2 Education

Most respondents during qualitative data collection reported that education is important for them. They believe that the life of their children might be changed for the better with education. One said that he would do anything to be able to finance his child's education. Table 9 shows the education of people with 15 years and more, here 66.6% report that they can read and write while 65% report that they ever went to school. These levels are low compared to the national average. This might be due to farmers being relatively less educated than the average person in Sumenep.

Table 9: Education of People 15 Years or Older

	Nr. Obs	Mean
Can Read and Write	637.00	66.56
Ever Went to School	642.00	64.95

As seen in table 10, most but not all children go to school. Some 89.23 of boys between seven and fifteen years report that they can read and write while this percentage is 93.1% for girls. Only 3% of the boys and 3.4% of the girls in the same age group report that they never went to school.

Table 10: Education of children 7-15 years

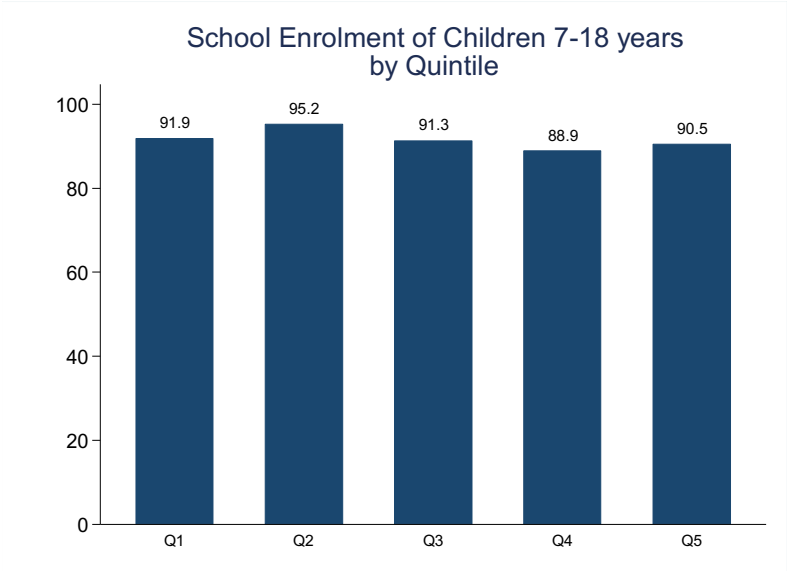
	Nr. Obs Boys	mean Boys	Nr. Obs Girls	mean Girls
Can Read and Write	65.00	89.23	58.00	93.10
Ever Went to School	66.00	96.97	59.00	96.61

As can be seen in table 11, school enrolment for the age group 9-11 years is the highest and is reported to be 100% for girls and boys. Younger children are less likely to be enrolled in school (72.7% for age group 6-8 years) and also older children are less likely to be enrolled in school. Apart for the age group 15-18 years, girls are less likely to go school than boys. 82.4% boy's enrolment and 69% girl's enrolment for the age group 6-8 years are reported, and the age group 19-22 reports 68% enrolment of boys and 46.7% enrolment of girls.

Table 11: School Enrolment by Age Group

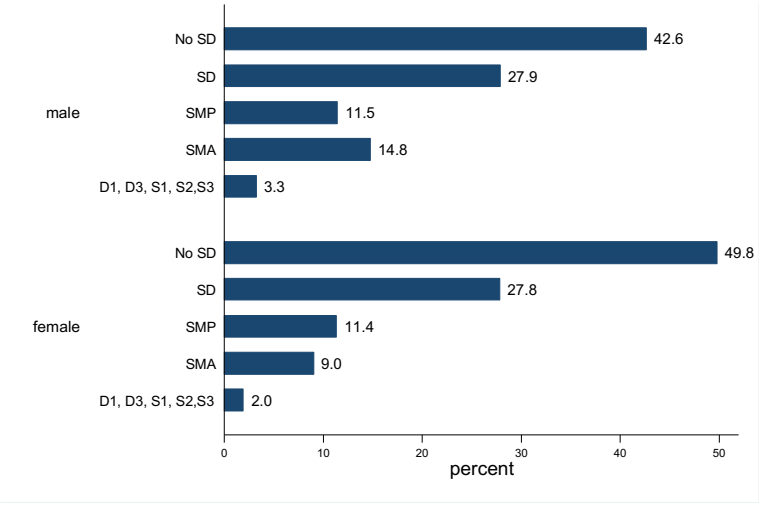
	ALL		Male		Female	
	Mean	Nr. Obs.	Mean	Nr. Obs.	Mean	Nr. Obs.
age 6-8	72.7	33.0	82.4	17.0	60.0	15.0
age 9-11	100.0	40.0	100.0	16.0	100.0	23.0
age 12-14	95.0	40.0	95.5	22.0	94.1	17.0
age 15-18	92.6	54.0	90.9	33.0	95.0	20.0
age 19-22	56.4	55.0	68.0	25.0	46.7	30.0

Figure 1: School enrolment for children 7-18 years old by quintiles.



As seen in figure 1 school enrolment of children between 7 and 18 years is on average higher than 85% for all quintiles. There is no clear trend visible across the quintiles. 42.6% of the men and 49.8% of the women interviewed in Sumenep report that their highest education is not finishing elementary school (No SD). Around 28% of men and women report that primary school is their highest education while around 11.5% report that junior high school (SMP) is their highest degree. While 14.8% of the men report that senior high school is their highest education this percentage is lower for women (9%). Higher education was achieved by less than 4% by men and women. The percentage of women, however, is slightly lower with 2%.

Figure 2: Highest Education of Persons 25+ years



Terms: No SD = not going/ not finishing elementary school; SD = Elementary school; SMP = Secondary school; SMA = Senior High school; D1, D3, S1, S2, S3 = Higher education such as Academy, University, and post-graduate.

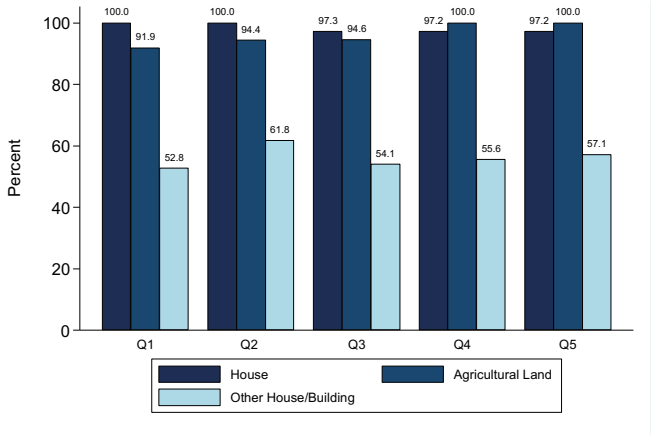
4.2 Physical Assets

Physical assets comprise the basic infrastructure and producer goods needed to support household members to pursue their livelihood strategies (see DFID, 1999). These can include: infrastructure, the physical environment that help people to meet their basic needs and to be more productive; and producer goods, the tools and equipment that people use to function more productively. The following components of infrastructure are usually essential for sustainable livelihoods: affordable transport; secure shelter and buildings; adequate water supply and sanitation; clean, affordable energy; and access to information (communications). This section will focus on housing, household, agricultural assets as well as livestock holdings.

4.2.1 Housing, WC, Electricity and Water

Almost 100% of the respondents have their own house. According to qualitative data collected, the house is considered the most important asset for local households. It was reported to be more important than land and transportation assets. Respondents explained that housing gives them security and convenience and allows them to live and work peacefully. They also explained that they often inherit the house from their parents or parents-in-law. Also agricultural land is owned by over 90% in all quintiles while the percentage is higher for households in the highest expenditure quintile (figure 3). Other houses or buildings are owned by around 50% to 60% while no trend is discernible by quintile.

Figure 3: Assets - House and Land

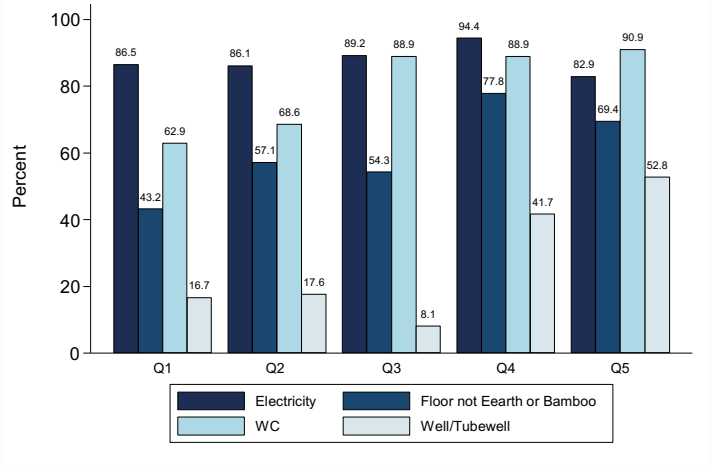


Not all households have electricity. As can be seen in figure 4 over 80% of the households have electricity across all expenditure quintiles. Whether a household has electricity may depend on location since some villages have electricity access to the national grid (which provides access for the households) while for other households it is more difficult to access electricity. Other households might not be able to afford electricity.

Better floor material (no bamboo or earth) is used more commonly in households in higher expenditure quintiles. 43.2% report having better floor material in the lowest expenditure quintile while the percentage is higher for higher expenditure quintiles. The highest expenditures quintile reports 69.4% using better housing material. Similarly, toilet facilities are possessed more often by higher expenditure quintiles. In the lowest quintile only 62.9% of the households report having toilets while this rises to 90.9% of the highest quintile.

Wells and tube wells are not often possessed by local households. Only 16.7% of the lowest expenditure quintile reports having a well or tube well, while 52.8% in the highest expenditure quintile report having these. The rather low percentages of well or a tube well ownership does not necessarily equate to low access to water. In some cases in Sumenep this may be explained as public water access is provided by the government on a village level in agreements between inhabitants. For some households, building a well or tube well in the household is a secondary need because they already have access to water even if it is not private.

Figure 4: Assets - Housing

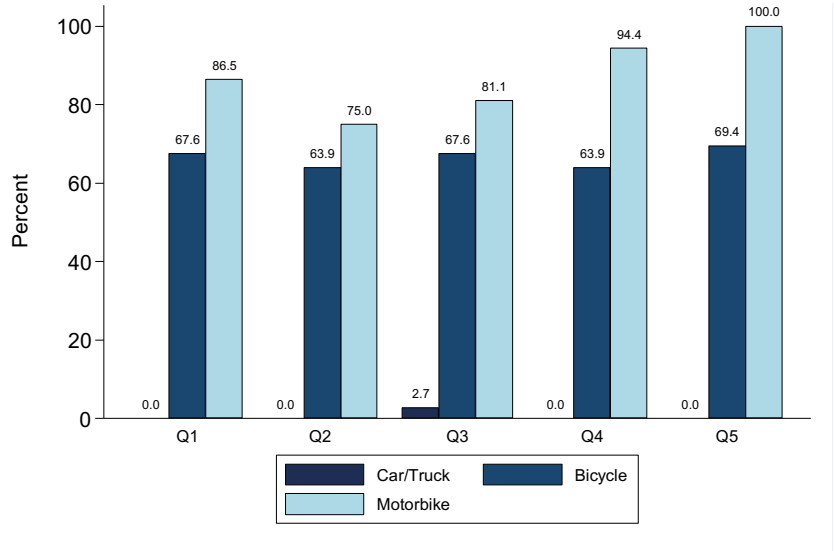


4.2.2 Transport

The most common means of transportation in Sumenep is the motor cycle. More than 75% of the households in every quintile report having a motorcycle, with more households possessing motorcycles in higher expenditure quintiles. During qualitative data collection it was reported that transportation assets are important as they enable the household members to be mobile. For households which do not have motorcycles, household members report using *angkot* (car for public transportation) and *ojek* (motorcycle for public transportation) as alternative means of transportation. There were also respondents that explained that they generally walk to their agricultural lands.

More than 60% of respondents in every quintile own bicycles. Bicycles are used generally for short distance transportation. Cars and trucks are a very uncommon means of transportation in the sample. Households that reported having a car or a truck during qualitative data collection explained that they need those assets for long distance transportation or to run their business successfully.

Figure 5: Assets - Transport

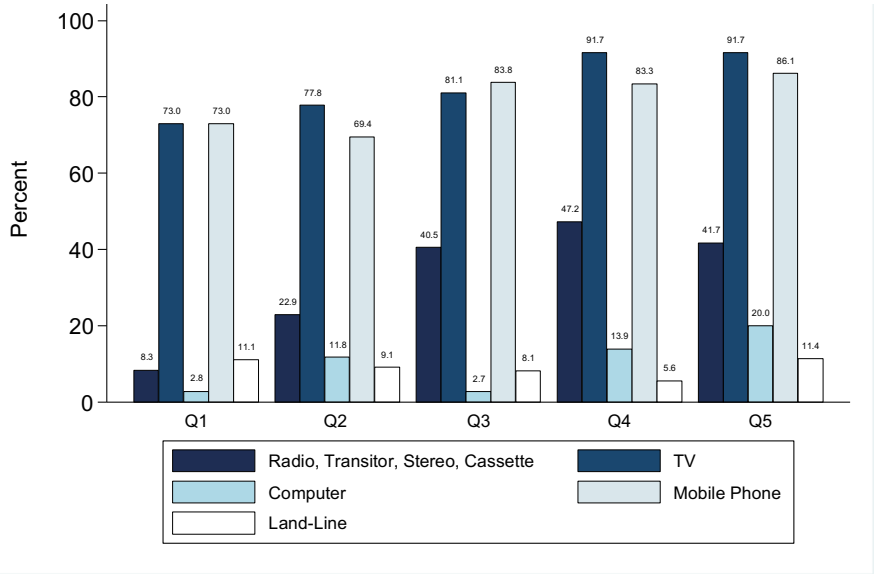


4.2.3 Communication Assets

As seen figure 6, television and mobile phone are common communication assets. More than around 70% of households have a television and a mobile phone across all expenditure quintiles. Both assets are possessed more often by households in the highest expenditure quintile. The mobile phone is used for communicating with friends and family as well as for business issues. Television is used for both entertainment and information.

Having a radio, computer or a landline is less common. 8.3 % of households report having a radio, transistor, stereo or cassette in the lowest expenditure quintile. The higher expenditure quintiles report higher numbers while the highest expenditure quintile reports 41.7% possessing those items. Also computers are more common in higher expenditure quintiles and 20% report having a computer in the highest expenditure quintile. Land lines are not very frequent with less than 15% report having a land line across all expenditure quintiles.

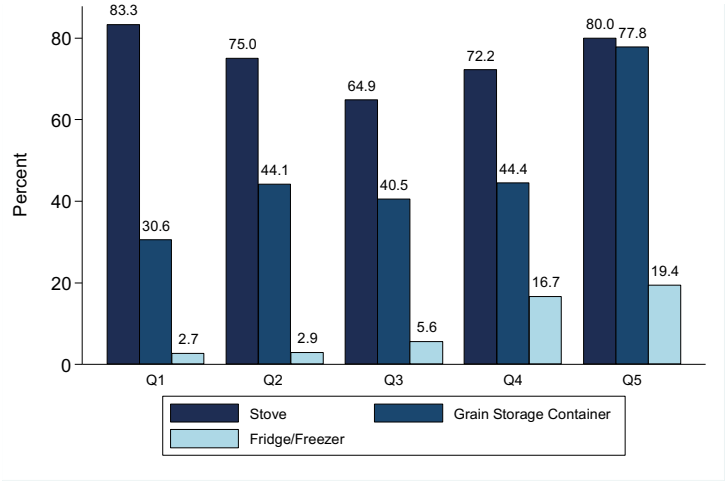
Figure 6: Assets - Communication



4.2.4 Storing and Kitchen Assets

Most of respondents have stoves across all expenditure quintiles. In addition to cooking, the stove is also used for heating maize when they store it in the kitchen. The maize is usually stored on top of the stove. This traditional technique is used to avoid disease while the maize can be stored longer like this. According to data from qualitative interviews the stove is often heated with firewood which they source from local forests.

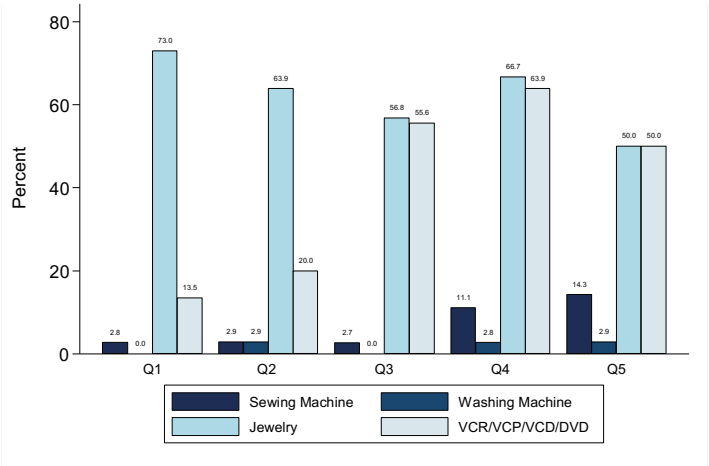
Figure 7: Assets – Kitchen and Storage



Grain storage containers are reported to be owned by 30.6% of the households in the lowest expenditure quintile, while this percentage rises for higher quintiles reaching some 77.8% for the highest expenditure quintile. This is a significant difference. Since the intervention is concerned with higher productivity (which relates to storing) this might indicate that higher expenditure quintiles invest more in storage facilities. Just 2.7% of the households in the lowest expenditure quintile report having a fridge. This percentage is steadily higher for higher expenditure quintiles reaching 19.4% in the highest expenditure quintile.

4.2.5 Other Household Assets

Figure 8: Assets – Other Household Items



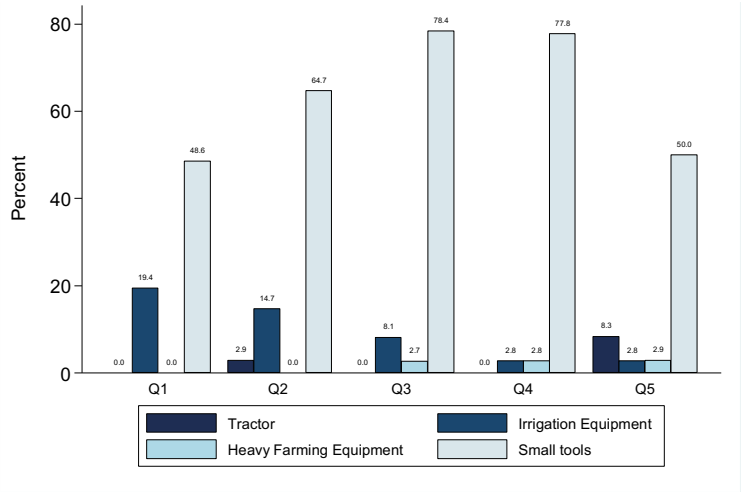
Washing and sewing machines are not very common amongst households in the sample. Both however are more present in higher expenditure quintiles. Most respondents have jewellery in their household. According to qualitative interviews, most see jewellery as a saving or investment. They said that jewellery (especially gold) can be sold easily if they need money. In addition to this, the value of jewellery is reported to appreciate so it corresponds to the idea that it is a form of investment. Surprisingly households which are in higher

expenditure quintiles reported having less jewellery. VCR/CP/VCD/DVD is reported to be owned by 12.5% of the lowest expenditure quintile while the percentage is higher for higher expenditure quintiles.

4.2.6 Agricultural Assets

Very few households reported owning tractors or other heavy farming equipment. This may be due to reports that some households can access tractors through their farmer group (which receives tractors from the government). However, there were other households that reported during qualitative data collection that they do not have access to tractors and instead use cows for farm labour purposes. If they do not have cows, they can also rent cows from within the village. Irrigation systems are not common locally. Notably, irrigation systems are more frequent in lower expenditure quintiles. Households without irrigation systems report that they are dependent on rain to water their crops. As seen in figure 9, small tools (such as axes, hammers, hoes, etc.) are widely owed by the households. The trend to have those items increases by expenditure quintile.

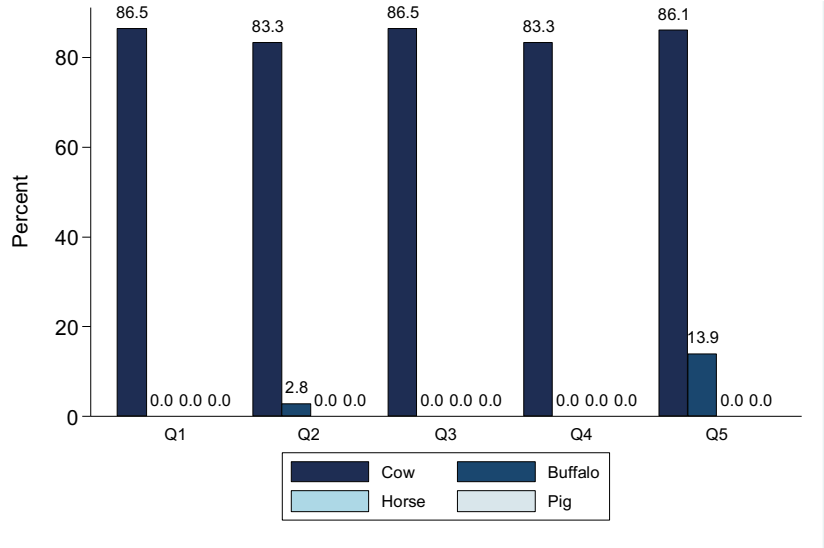
Figure 9: Assets - Agricultural Items



4.2.7 Livestock

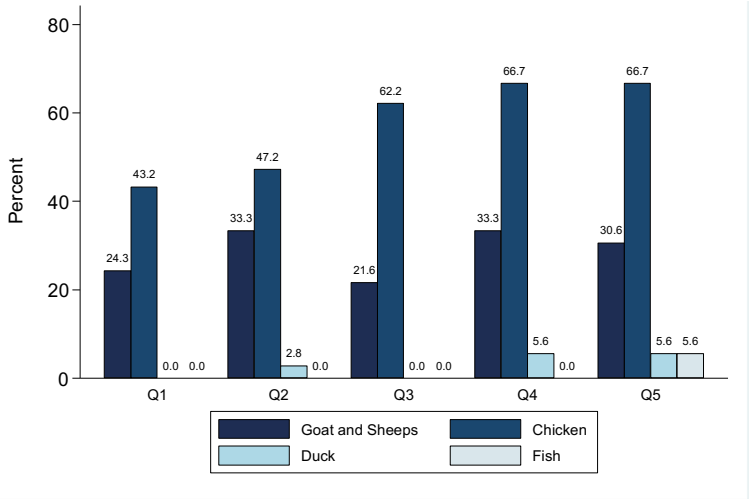
Cows are the most common type of livestock in Sumenep. Aside from land and gold, farmers generally consider cows as an investment and a form of savings. This is also reflected in the fact that Sumenep has the biggest cow population in East Java (Statistic Centre Agency, 2015). According to qualitative responses, cows are used for selling but also as farm equipment to loosening the soil using traditional tilling practices.

Figure 10: Large Livestock by Quintile



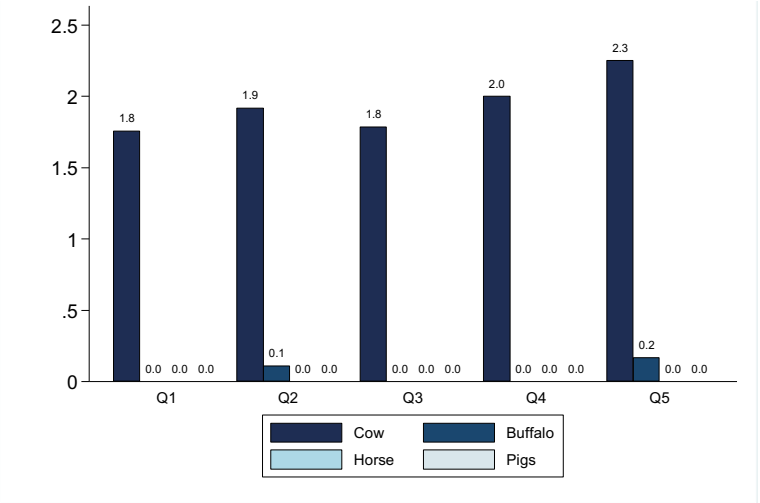
Aside from cows, chickens are a common livestock in Sumenep. The higher the expenditure quintile the higher the probability that the household will have chickens. Chickens are generally used to sell or for consumption by households. Chickens are usually slaughtered during special events including Islamic celebrations (*Eid-ul-Fitri* and *Eid-ul-Adha*). Buffalos are not very common, and most buffalos are only possessed by households in the highest expenditure quintile.

Figure 11: Other Livestock by Quintile



Goats are a common type of livestock for the sample households in Sumenep as can be seen in figure 11. These are less frequently found than cows or chickens. Ducks and fish are only possessed by very few households.

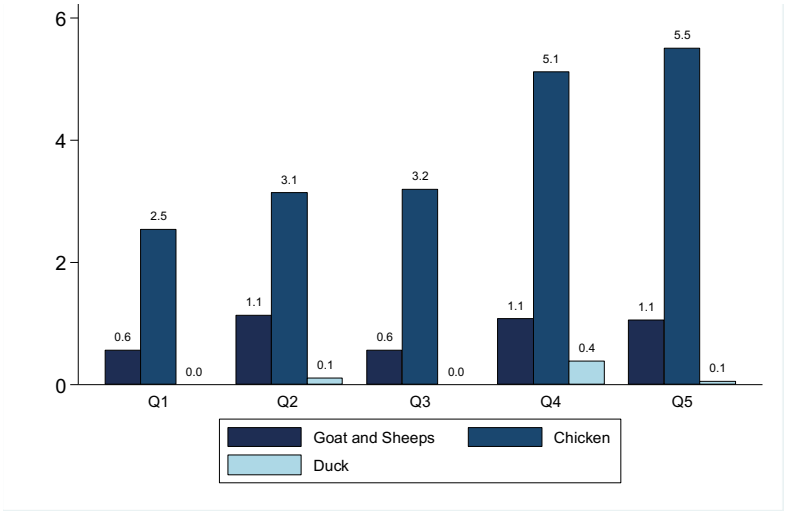
Figure 12: Amount of Large Livestock by Quintile



As seen in figures 12 and 13[1], the number of cows and chickens is correlated against the expenditure quintile, with higher expenditure quintiles reporting more livestock. People in the highest expenditure quintile have 2.3 cows on average while this is 1.8 for the lowest expenditure quintile. Also higher expenditure quintiles have more than twice as many chickens than households in the lowest expenditure quintile.

[1] Two outliers were taken out for the number of chickens and one outlier was taken out for the number of goats. Fish was taken out because they are another dimension of numbers and are owned by few respondents.

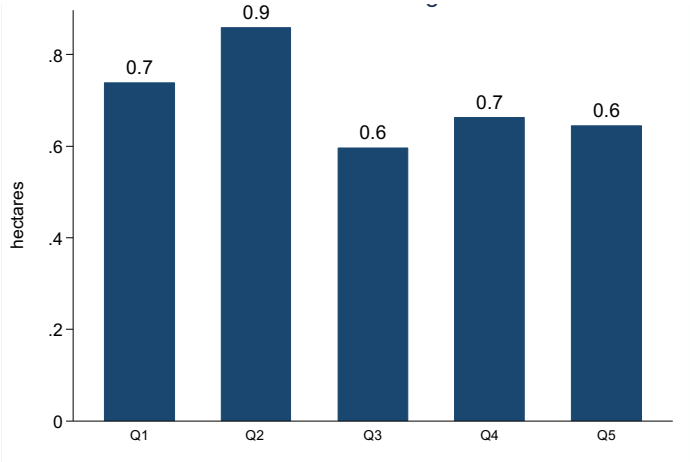
Figure 13: Amount of Other Livestock by Quintile



4.3 Natural Assets

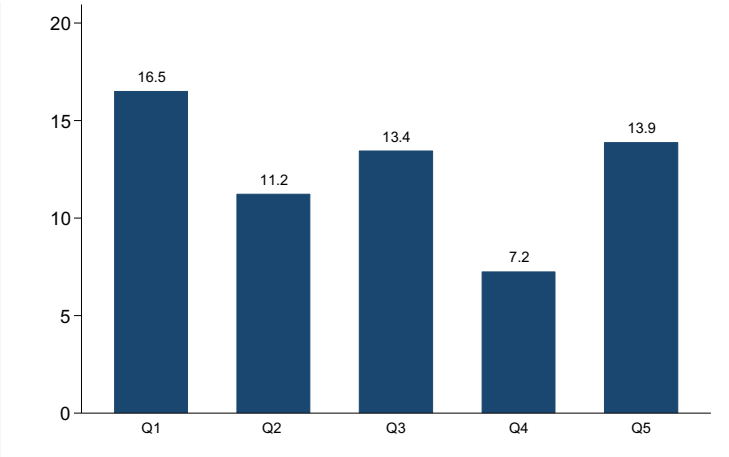
Natural resource stock is considered a natural resource from which the household can get resource flow and services (DFID, 1999). Land is typically classified as natural asset and agricultural land is very common amongst local households. The amount of hectares owned by those who have agricultural land can be seen in figure 14[2]. The number of hectares owned by the households lies within a small range for the quintiles reaching from 0.6 until 0.9 hectares, indicating that there is little difference between the quintiles in relation to land ownership. As shown in figure 15, the lowest expenditure quintile generates the largest share of consumption by them or received food from other parties (16.5%). The highest expenditure quintile generates or receives 13.9% of their food consumption. The trend to buy food therefore appears to increase with expenditure quintile.

Figure 14: Land Holdings by Quintile



[2] Two outliers were taken out

Figure 15: Own Production and Received Food/ Total Food Consumption



4.4 Social Assets

Social assets are social resources upon which people draw to pursue their livelihood objective (DFID, 1999). Sumenep has different aspects which might be considered as social assets. During qualitative data collection it was found that family neighbours and friends play an important role in a household's livelihood situation. In particular, households rely on their friends and neighbours in situation of stress and uncertainty. Qualitative data collection indicates that three households explained that when they faced a lack of money they do not reduce their consumption, rather they borrowed money and food from their neighbours, family, and friends.

Many households report savings systems within the villages (e.g. *arisan*) which encourage farmers to save each week. The amount of money paid by the households varies and depends on the ability of the farmers to pay. In this, farmer groups play also an important role for the livelihood situation of the households. Farmers receive free seeds if they are members of farmer groups, which are often indirectly obtained by the government. In addition to this, farmers report also borrowing and saving money in farmer groups. Equipment such as tractors can be borrowed by members of farmer groups. Tractors might be given to the farmer groups by the government or acquired through joint saving efforts of the members.

Another form of social interdependence in Sumenep are celebrations. As discussed during qualitative data collection large events such as marriage are seldom financed by the celebrating household alone, but rather are commonly financed by the whole community. Neighbours, friends, and family often help finance those events for instance by offering rice. The amount of what is offered to the celebrating household depends on the neighbours, friends, and families' financial capability and how close relationships are to the household. The amount given to the household might even be written down and shall be returned once the household has a celebration of its own.

4.5 Financial Assets

Financial capital denotes the financial resource that people use to achieve their livelihood objective (DFID, 1999). This includes savings and borrowings by local households. While borrowing may not be considered as a financial asset it does indicate a level of access to credit which can be seen as a valuable asset.

As can be seen in figure 16[3], savings decrease as a percentage with expenditure quintile, which is surprising. Borrowings instead are increasing with expenditure quintile. In absolute terms however (see figure 17), households in higher expenditure quintiles have greater value savings and borrowings (for those who have savings or expenditures). The average household in the first expenditure quintile has 1.5 million IDR savings and 0.6 million IDR borrowings. In the highest expenditure quintile savings are 2.8 million IDR while borrowings are 2.6 million IDR. During qualitative data collection households reported that some do not take credit because they are concerned about repayments (interest and the payment schedule).

Figure 16: Saving and Borrowing by Quintile

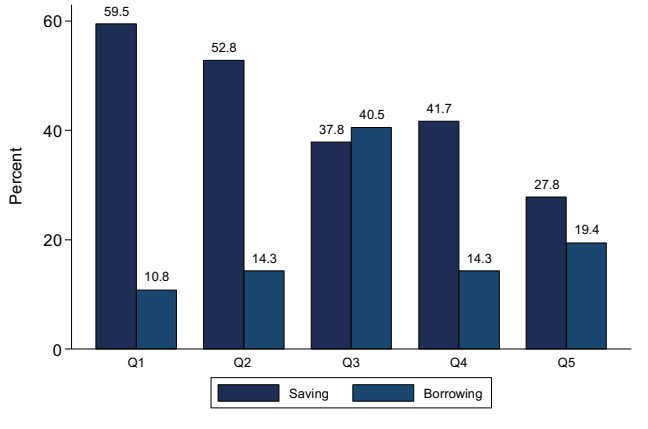
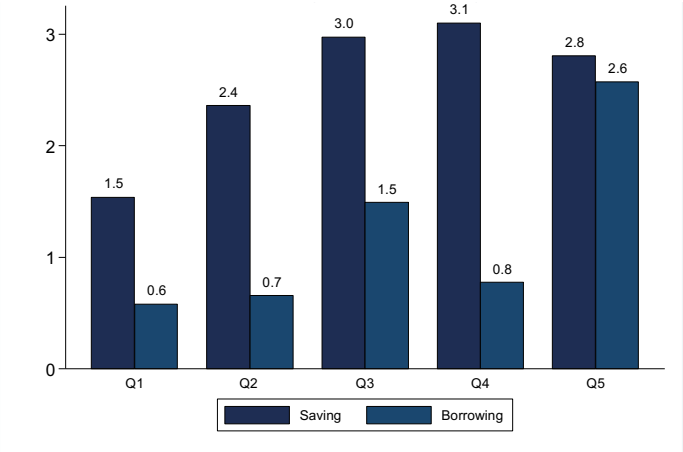


Figure 17: Saving and Borrowing by Quintile - total amount in IDR



[3] Data of savings and borrowings was not always conclusive since it was contradicting. Therefore results should be interpreted with caution.

During qualitative data collection households reported various ways to save money. Banks, *koperasi*, *arisan*, and farmer groups were mentioned as institutions through which to save money. Three respondents of qualitative interviews said that banks and *koperasi* are the best place to saving money because they have professional management and it also allows them to borrow money there. Also farmer groups were mentioned as institutions in which to save money.

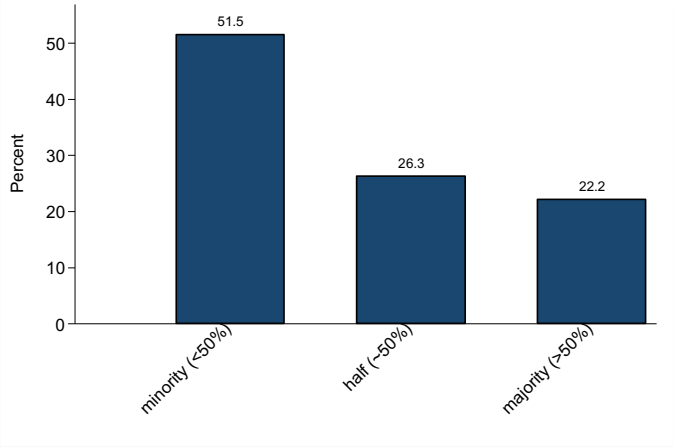
Besides those forms of saving also jewellery (as gold), *arisan* and livestock (especially cows) are seen as a form of saving. Jewellery and livestock can be sold very quickly when they have sudden needs and urgently need money. Some households responded that they consider maize stock to be savings (qualitative data). As will be discussed later, this may be related to the way some households determine the point of sales.

Usually households borrow money from their neighbours, family, and friends. According to interviews during qualitative data collection, farmers can also borrow money from within farmer groups. However, farmer groups tend to lend money in small values only as they do not have the scale of resources compared to banks or *koperasi*.

5 Income Generation

Regarding the income generation strategies of the households, as can be seen in figure 18 51.5% of households report that the minority of their income is generated by agricultural and livestock activities. Some 26.3% report that around half of their income comes from these activities, while 22.2%, or 1 in 5, reported that the majority of their income comes from agriculture or livestock activities. These findings correspond with qualitative data responses which indicated a variety of income sources. Households do not only depend on those agriculture or livestock activities, as different jobs including seed distributor, coconut distributor, governmental staff, chicken trader, egg producer, and casual labourer were mentioned. Labour-based activities might also depend on the village. In Kopedi for instance it is common that men work as fisherman while they also cultivate different crops. However, other households report being mainly dependent on their agricultural and livestock income.

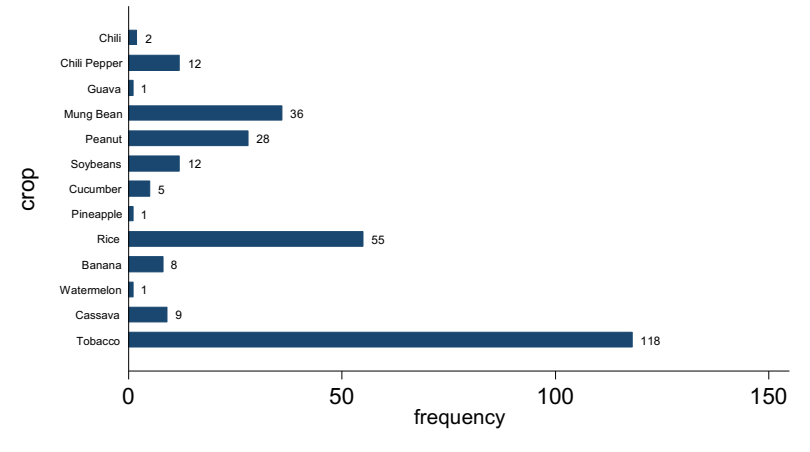
Figure 18: Agriculture and Livestock Income Generation



5.1 Agricultural Activity with Focus on Maize

While maize is important there are other crops that are also important for the households. Tobacco was mentioned by most during qualitative data collection, and which is also attested in figure 19 where 118 households report that tobacco is one of the three most important income sources. During qualitative data collection some households perceived that it is their largest income source. Also rice (55 households), mung bean (36 households), peanuts (28 households), soybeans (12 households), and chili pepper (12 households) were mentioned to be important for local households.

Figure 19: Frequency of Crops mentioned as one of the three most important (except maize) in terms of income



As can be seen in figures 20 and 21, income from crops are used for different purposes. While some are mainly used for household consumption, other crops are used primarily for sales. During qualitative data collection all households reported that they use part of the maize they produce to supplement their own household consumption. Some even reported not selling at all at times, and using all for own consumption which is also reflected in figure 20 – where 64 households report that they plant maize only for self-consumption and where no selling was reported. During qualitative data collection some households explained that they use maize as a staple food in their household. This was first priority, where the second priority is to sell maize. In comparison, rice was the second most used crop for self-consumption reported by 15 households to be only used primarily for this purpose.

In contrast to this, there are also households (120) which report that they sell more than 50% of their maize (see figure 21). Also tobacco was reported to be mainly used for sales by 115 households. Since there are no households reporting that they mainly consume tobacco, tobacco might be considered as a cash crop. Also mung bean (35 households), peanut (27 households) and soybean (12 households) are mainly produced to sell. While rice is often used for self-consumption as just discussed, it is also reported to be mainly sold by 30 households.

Figure 20: Crops for Self-consumption (reported no selling)

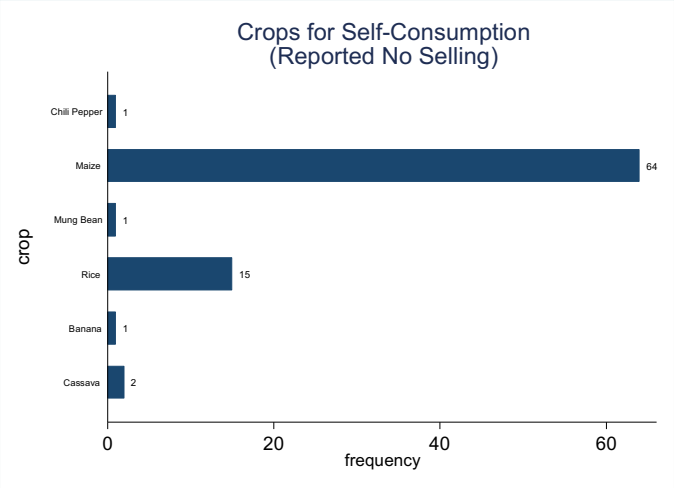
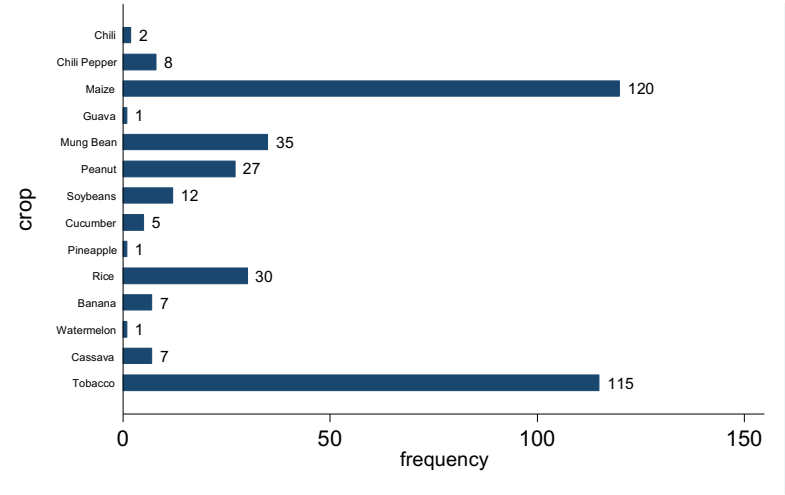


Figure 21: Crops which are mainly sold (reported as 50%+ selling)



As can be seen in figure 22, households generate most income from maize between April and the following months as well as January, corresponding to the two harvest season and the month after. For other crops, households report mostly selling them during the dry season which also corresponds with the tobacco harvesting season.

Figure 22: Maize selling by calendar month

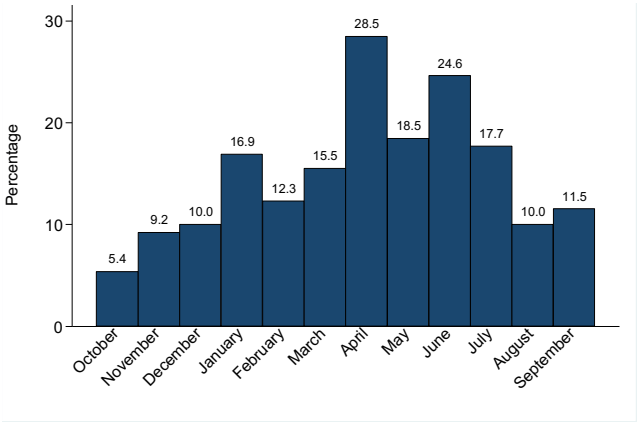


Figure 23: Other crop (crops other than maize) sales by calendar month

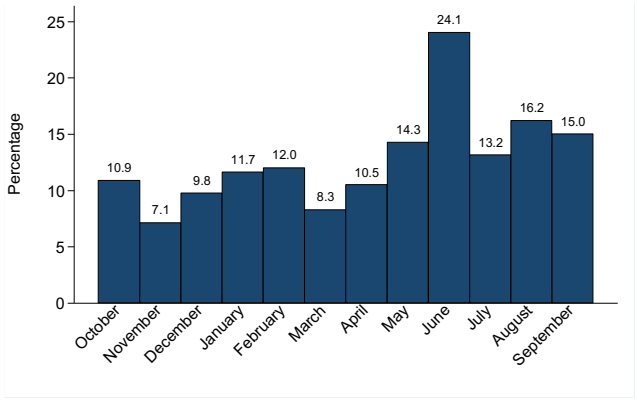


Table 12 shows the percentage that maize contributes to the total income from households. These households claim that around a third (31%) of their income comes from maize.

Table 12: Income Earned with Maize

	Nr. Obs	mean
Percent of Total HH Income Earned with Maize	193.00	30.83

During qualitative data collection two households explained that they were planting hybrid seeds for the first time because they got hybrid seeds from the government which was encouraging households to try the technology. They knew that hybrid seeds have better yields but considered them to be costly. Another household not cultivating using hybrid seeds said that the seeds were expensive and led to produce that was 'not very delicious'. Also, one household responded that hybrid seeds cannot be stored very long. While local seeds can be stored up to a year, hybrid seeds can only be stored for a maximum of six months. Since the farmer claimed he needed to consume the maize year round, the household needs to plant hybrid seed.

To sell maize households report a range of behaviours. Four respondents explained that they usually sell maize to a trader which comes to the village, making it easier for them as they do not have to travel anywhere. Selling in the *warung* was mentioned by two respondents, which are also near the homes from which they were selling. Two respondents explained that they go to the local markets because the price there

is better than what the trader offer, and that in the markets they can get information about the price situation.

The price which households command is important for the maize farmers as it directly determines their income. While some households selling maize consider the price situation and wait if they consider the price not to meet their expectations, other households report that they are compelled to sell even if the price is low because they need the money.

The perception of a 'high' price however is not consistent across the households interviewed during qualitative data collection. One household explained that the highest price they can get is 3'200 IDR per kg. The household member said that if the price is 3200 IDR per kg then the government imports maize and therefore the price can never be higher than 3200 IDR per kg. Other households consider 3000 IDR per kg as high enough to sell maize. Another household stated that the best way to get information about the prices is when going to the market. Sometimes 2'800 IDR per kg is already a good price.

Sales practices also show some diversity. Some households report selling all the maize they have at once while dominantly the households claim that they sell their maize by parts. Households explained that they only sell maize when they need money. Those that are more price-sensitive, sell only parts because they hope that the price might be higher in the future. Other households, however, explain that they wait until the price is highest within a year. If they do not expect it to rise any longer they sell everything at once. Other households however explained that they sell everything right after the harvesting season as this is the time when the household needs to repay debts, has social expenditures and finances education.

Regarding gender division of labour, four households reported that the husband and wife generate income from agriculture and manage livestock together. Other households explained that the husband generates the income while the housewife is more responsible to manage issues within the house. As can be seen in table 13 also the decision when to sell maize is mostly the preserve of male household members. Yet in around a quarter (27.1%) of households, women are reported to be the most important decision maker.

There were other households which reported that they do not themselves manage their land but this is done by labour outside their household. Many household members have other activities to earn income and do not have time to manage the land themselves. Once the harvest season comes they share the profits with the labourers. These households generally reported that children are not involved in field work. However, when needed (such as in the harvesting season) or when the children are available (such as in holiday periods) they do help in the field.

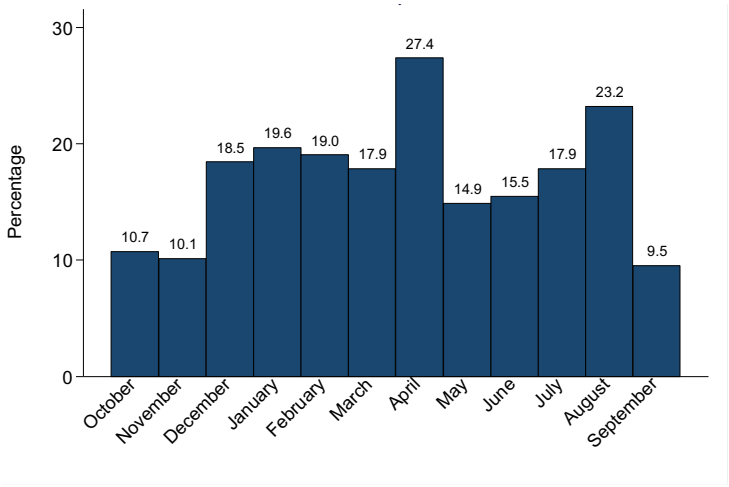
Table 13: Female Decision Making Power and Engagement in Maize Activities

	Nr. Obs	mean
Most important decision maker in HH is female: Selling Maize	129.00	27.13
Second important decision maker in HH is female: Selling Maize	128.00	75.78

5.2 Livestock Activities

Livestock rearing is also part of household income. As discussed the livestock can be seen as a form of investment. They are sold throughout the year as can be seen in figure 24. Livestock is sold regularly throughout the year but with peaks in April and August, which may be related to religious ceremonies such as *Eid-ul-Adha* (August)

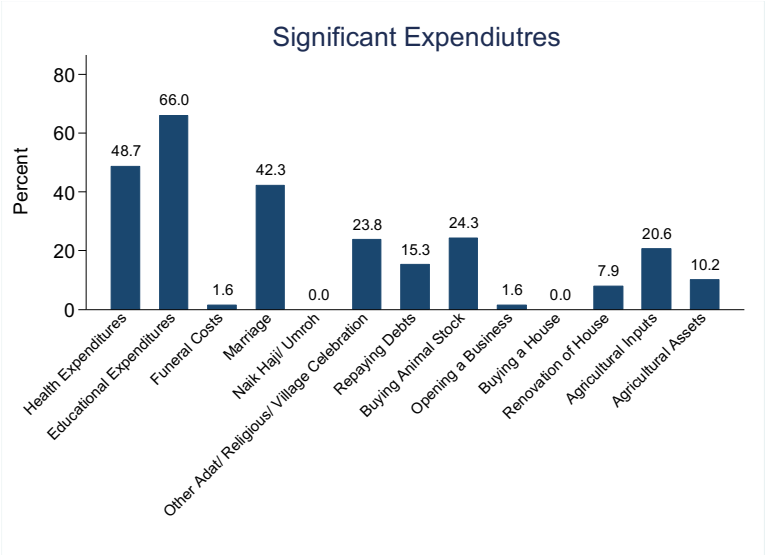
Figure 24: Month when people sell Livestock



6 Expenditures and Financial Expenditure

As can be seen in figure 25, education expenditure was mentioned by 66% of the households to be a significant expenditure in the last 12 months. Also health expenditure, expenditure for marriage and other *adat* celebrations were mentioned as most significant expenditure. For 24% of the households buying animal stock is a significant expenditure and 21% consider agricultural inputs are a significant expenditure.

Figure 25: Significant household expenditure



There was a range of response regarding the most important household expenditure. During qualitative data collection some households explained that food expenditure is the most important as it is the source of their energy. However, other households explained that to donate to the poor is most important because they are often being forgotten. Other households claimed that agricultural expenditure and business were most

important because it enables to generate further income. Also education was mentioned to be important as well.

6.1 Education Expenditure

As can be seen in figures 26 and 27, the share of total expenditure on education decreases by expenditure quintile. The total amount of IDR value spend for education per child does not seem to be much different across the quintiles.

Figure 26: Expenditure on Education (total)

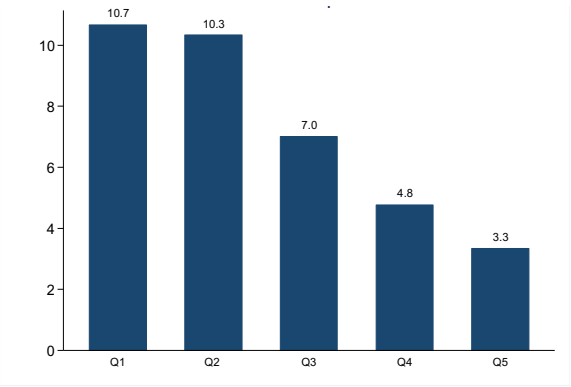
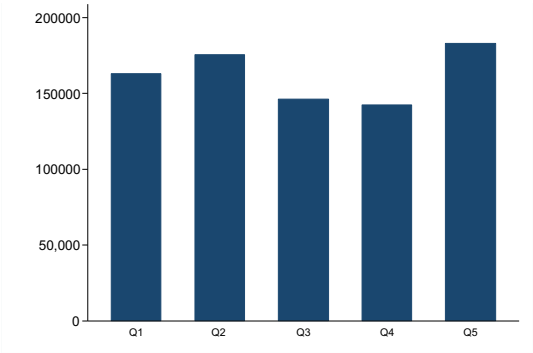


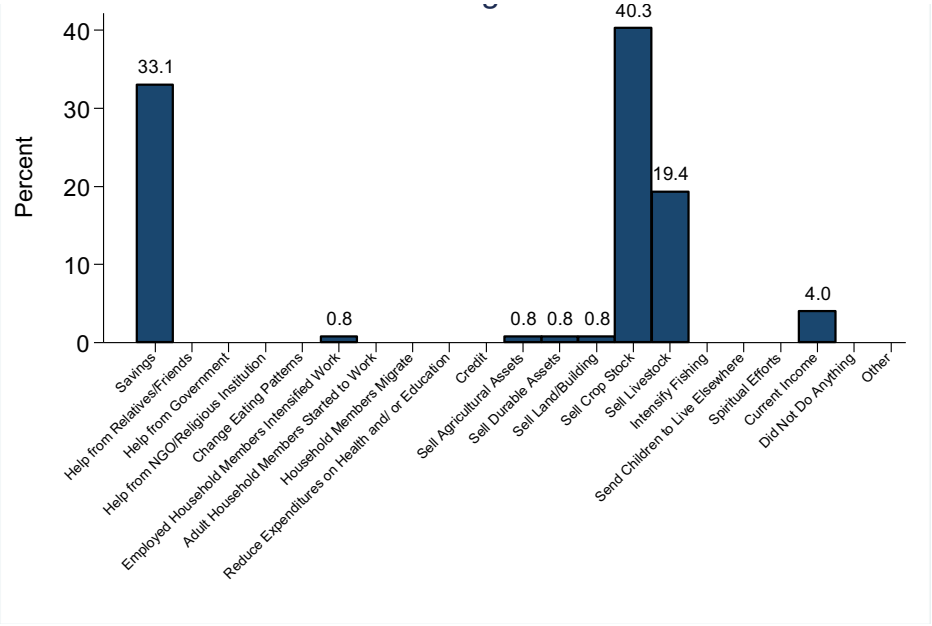
Figure 27: Expenditure on education per child



All households interviewed during qualitative data collection explained that they consider education to be important because it opens their children new possibilities and can lead to a better life in the future. Even though school is often free, many households still consider education as a large expenditure because they need to pay transportation costs, books, uniforms, and provide pocket money. For other households where books and uniforms are covered, they claimed they still need to pay for pocket money and transportation.

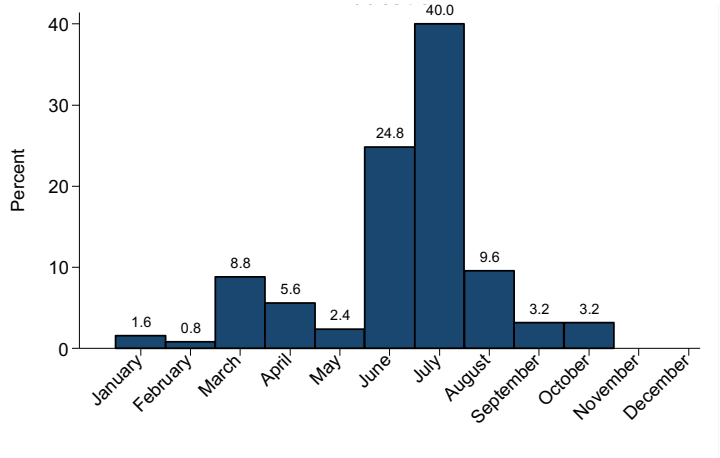
For households with children that study in a university, the cost of tuition and sometimes dormitory fees is considered a large expenditure. Those households are convinced that education can help their children change their life for the better. Two interviewed households reported that since they have enough money to finance their children's university they do not feel that those expenditures are a burden. Also, most of the households seem to be satisfied with the current education of their children as found during qualitative data collection. One household, however, explained that it is not satisfied with his daughter's education because she would like to go to university but the household cannot afford it.

Figure 28: financing of Education



As can be seen in figure 29, most households finance education while selling crops and livestock or by drawing upon their savings. Educational expenditure is typically due around harvest season as was seen in section 4. This might be the reason why the education expenditure are sometimes financed with crop stocks.

Figure 29: Timing of significant expenditures: Education

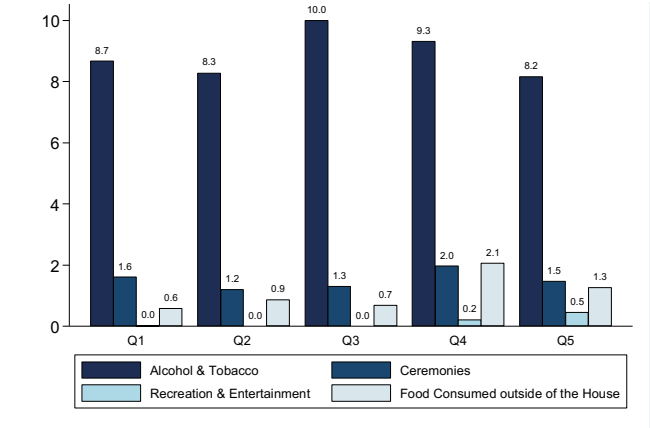


6.2 Social Expenditure

Social expenditure might include ceremonies, alcohol and tobacco, recreation and entertainment, and food consumed outside the household. These expenditures are typically made when in a group. Expenditures for tobacco and alcohol are four all quintiles around 8-10% of total expenditures. Because Madura is predominantly Muslim much of is likely to be tobacco consumption. No clear trend is visible across the quintiles. The expenditures for ceremonies are lower reaching around 1.2-2% depending on expenditure quintile. Also here no clear trend across quintiles can be reported. Expenditure for recreation and

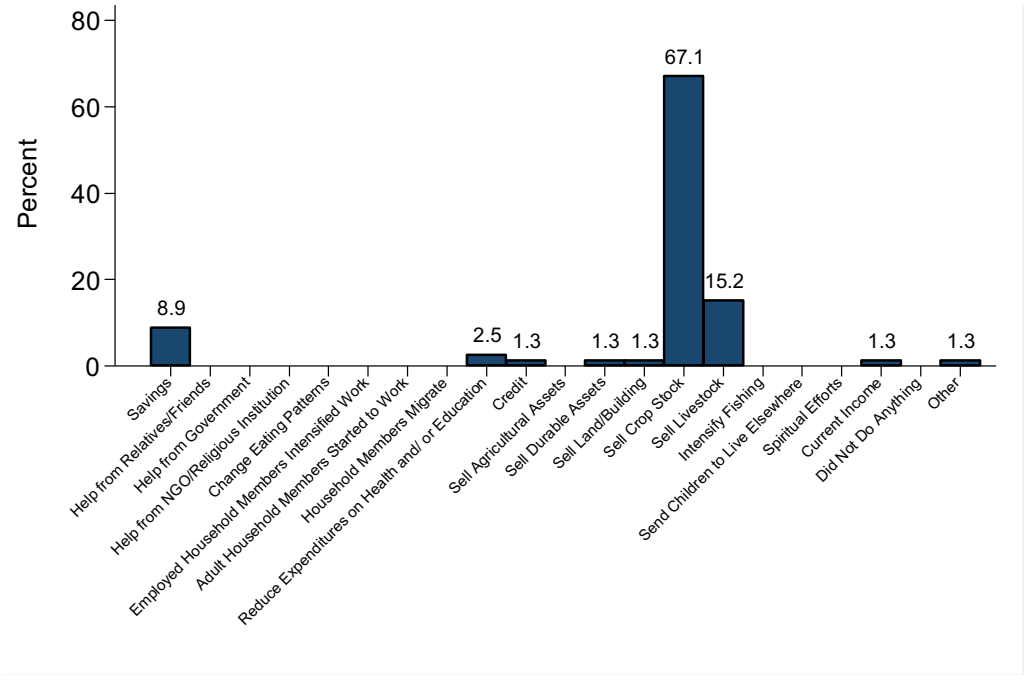
entertainment as well as for food consumed outside the house are increasing with expenditure quintile. This expenditure, however, is also relatively low for all quintiles.

Figure 30: Social Expenditure



Apart from this expenditure, also donations and gifts to other households are considered social expenditure. As was already discussed before, helping neighbours, family, and friends finance celebration is part of the local culture in Sumenep, while for instance for funerals and weddings it is a social obligation to provide rice to the household holding the ceremonies. As can be seen in figure 31, and also attested during quantitative data collection, many households reported that they mostly finance wedding expenditures with their crop stock.

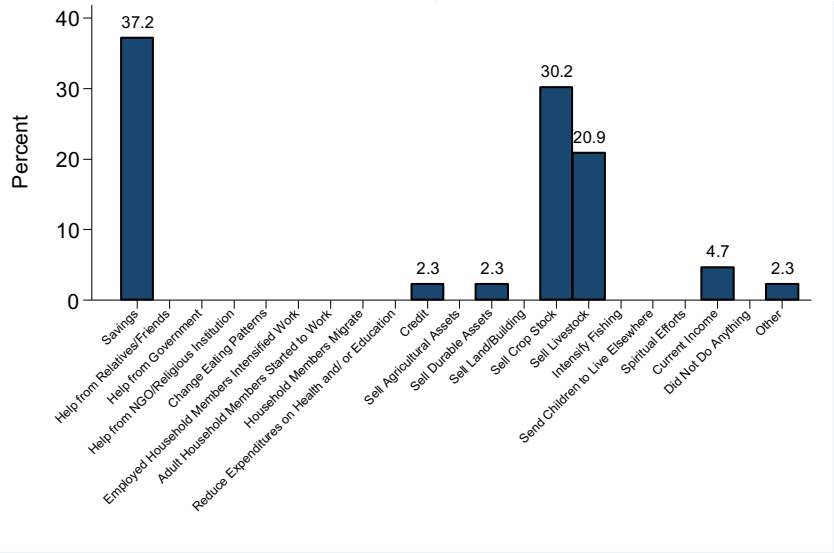
Figure 31: Financing Marriage



As can be seen in figure 32, other *adat* expenditures (generally village or religious celebrations) are financed with savings, selling crops and livestock as well. Even though only a few households report selling durable

goods or taking credit, it indicates the importance of *adat* celebrations. Some households mentioned reducing expenditures on education or health to being able to finance education. Those forms of financing marriage and other adat celebrations, however, are rare.

Figure 32: Financing other Adat



As can be seen in graphs 33 and 34, households hold most marriage and other *adat*, village or religious celebrations around April to October. This is the dryer period, and households generate most income around those months as reported in qualitative data collection.

Figure 33: Timing of significant expenditure – Marriage

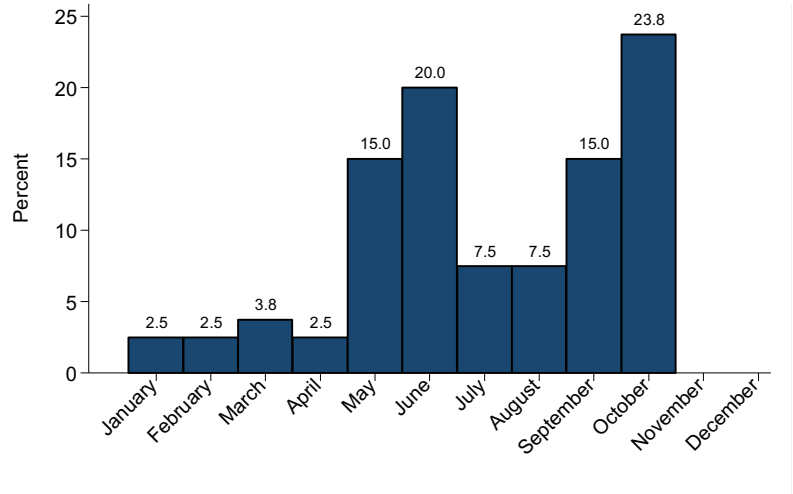
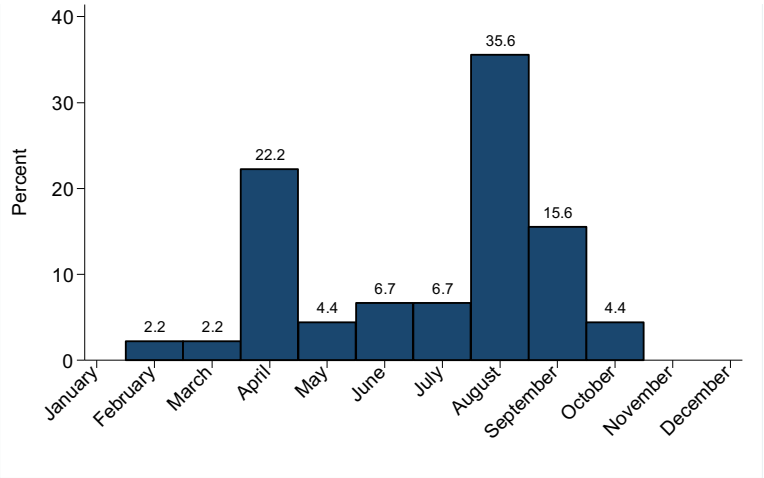


Figure 34: Timing of significant expenditure (other Adat/ religious/ village celebration)

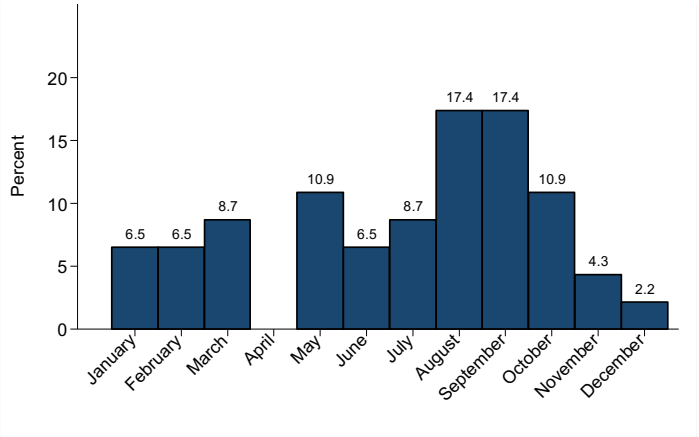


6.3 Livestock Expenditure

As reported by some households during qualitative data collection, small livestock is often financed by the earnings from selling grown livestock, business profits or by other forms of daily income. As discussed previously, livestock is also considered a form of investment and savings. Especially goats and cows are reported to being held to finance large expenditures in the future which might be or educational, business related (more livestock), or to finance healthcare.

Expenditure to hold animal stock are considered to be small since they feed the livestock with waste from their crops or by searching food for the livestock in the nearby forest. As can be seen the households buy animal stock around the year. In August and September, they buy most animal stock. This is likely to be caused by the *Eid-ul-Adha*, an Islamic celebration where households slaughter livestock (and held in September in 2015).

Figure 35: Timing of Significant Expenditure - buying animal stock



6.4 Agricultural Assets and Inputs

Most of the qualitative data respondents (5 of 9) explained that they do not consider maize inputs to be a significant expenditure during qualitative data collection, this is also reflected in figure 25. They access seeds

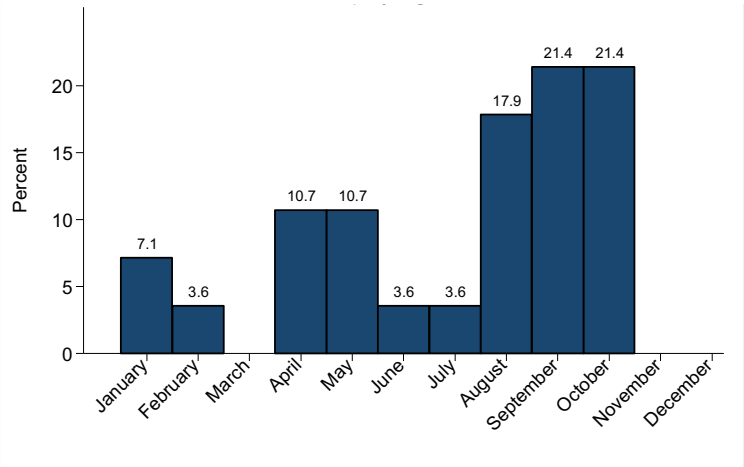
either from the government or cultivate local seeds from last seasons' crops. They need to purchase fertiliser. This expenditure is, however, not considered to be very costly.

Most of the households during qualitative data collection claimed that they finance inputs with daily expenditure, borrowing or drawing from their profits from business or agriculture. Also small tools are not considered to be a large expenditure and are financed with daily income. As was already discussed above, tractor and other large equipment might be provided by the farmer groups or cows are used.

6.5 Repaying Debt

Usually households borrow money from their neighbours, family, and friends but have also access to formal institutions as discussed previously. Borrowing is also an option when households have an important expenditure, but do not have enough money to finance them. These households report to borrow money during planting season, schooling periods, and for business expenditure, and health expenditure and for daily expenditure. During qualitative data collection, 6 of 9 respondents explained that tobacco gives them the most income. They explained that when they harvest tobacco they repay their debts, which is mainly during the months September and October.

Figure 36: Timing of significant expenditure - repaying debt



6.6 Food Expenditures

As can be seen in figure 37, the share of food consumption is increasing with expenditure quintile. This is surprising, since wealthier households usually tend to have lower shares of food expenditures. As can be seen the share lies between 63% and 75%. While total IDR value of non-food items has increased moderately in the higher expenditure quintile, the increase in absolute terms for food expenditure is more striking.

Figure 37: Food Expenditure by Quintile

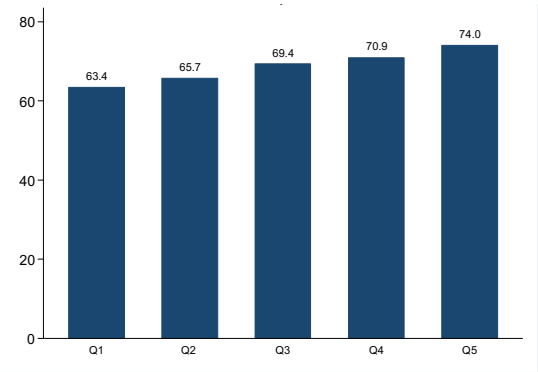
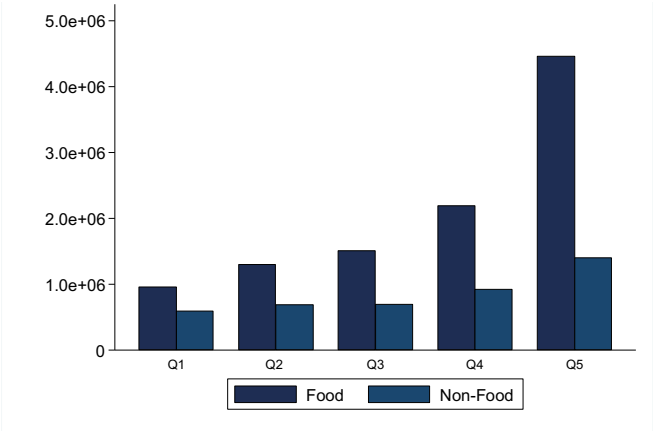


Figure 38: Total Food and non-food Expenditure by Quintile



As can be seen in figures 39 and 40, higher expenditure in food for higher quintiles is mainly driven by higher consumption of meat and fish. As Indonesia in general reports increasing rates of anaemia (Statistics Centre Agency, health profile, 2014), more meat and fish consumption therefore might indicate a preference for more diverse food consumption, richer in micronutrients, for higher expenditure quintiles. Also higher expenditure is reported in the consumption of beverages and vegetables. The share of money used for rice and other staple foods is seen to decrease by expenditure quintile.

Figure 39: Type of Food Expenditure by Quintile (total spend)

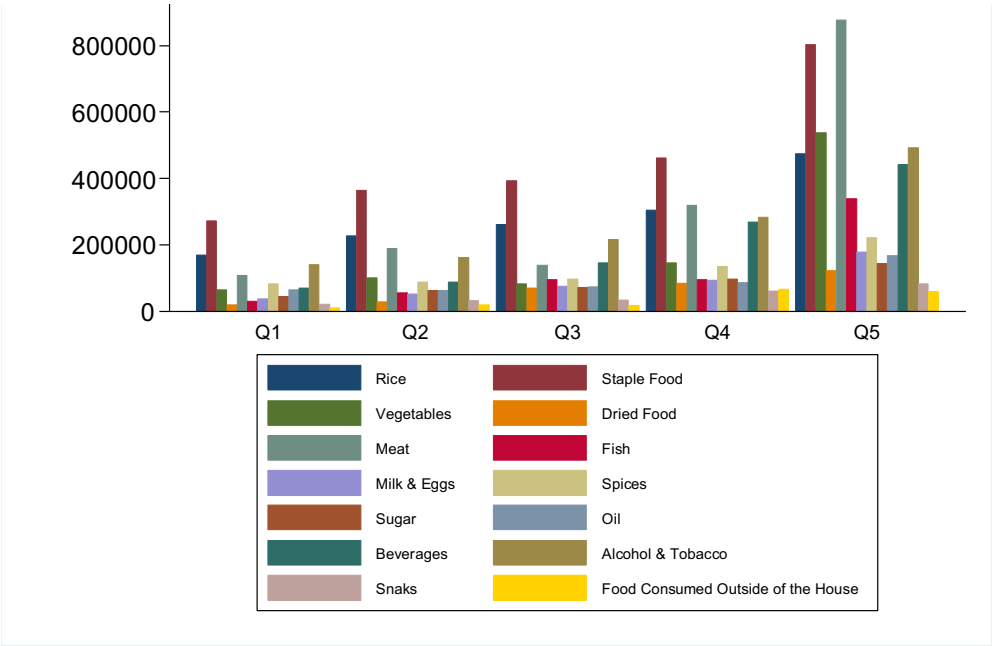
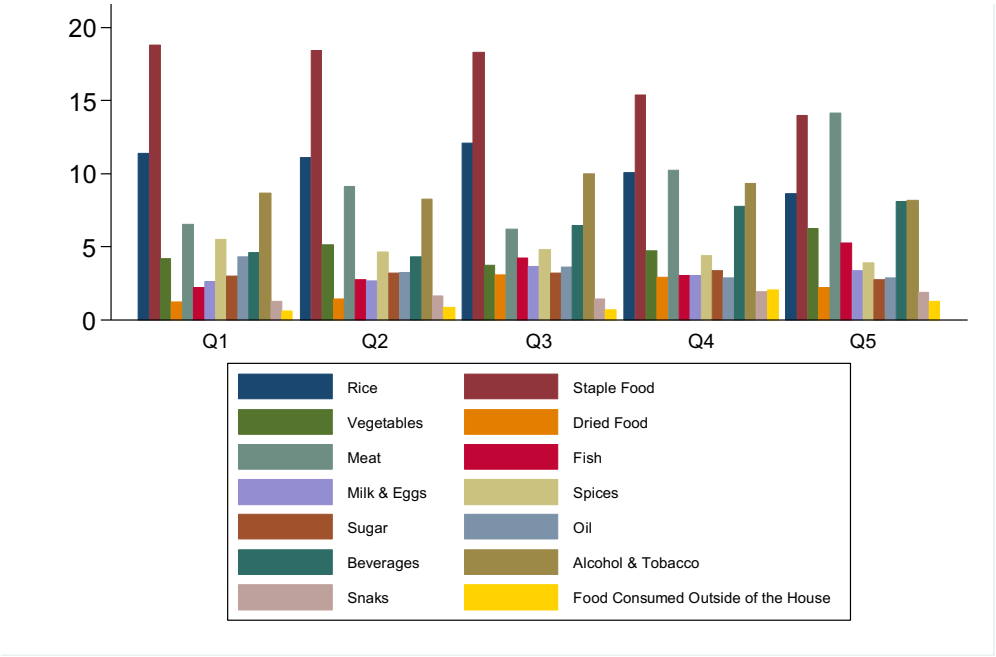


Figure 40: Share of Expenditure on Rice and Other staples by Quintile



7 Income Use of Maize

The way income of maize is reported to be used. As can be seen in figure 41, maize earnings are mainly used to finance daily household needs. Once such basic needs are satisfied the income is mainly used for savings or education costs. However, most of the expenditure types in the figure were identified through the

quantitative data collection. This means that after the household has satisfied daily household needs (for instance food consumption) they use the maize income for a range of expenditure priorities.

Income from tobacco (figure in appendix) is also considered to be an important source of income is mainly used for education costs. Therefore, income from crops seems to be used for a variety of purposes

Figure 41: Most important use of income derived from maize

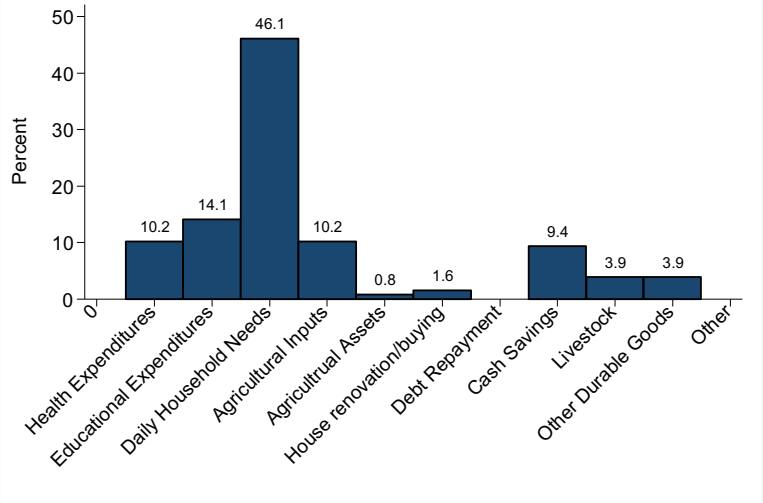
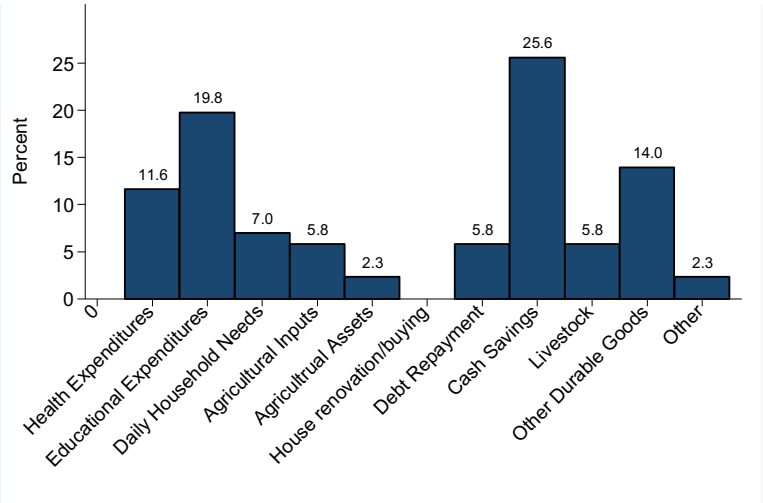


Figure 42: Second most important use of income derived from maize



During qualitative data collection most households reported that the household head decides what the income from maize is use for as the head of the household is responsible. Usually the head discusses with their partner. Since the household head is mostly reported to be male, women are generally not the most important decision makers within a household. As shown in table 14, 23% of the households report the most important decision maker with respect to what the income from maize is used for is reported to be female. The second most important decision maker is female for 77% of households. Qualitative data collection revealed that often the wife takes decisions when she is responsible to manage financial aspects and the husband trusts the wife to take reasonable decisions.

Table 14: Control and Decision Power of Earnings from Maize

	Nr. Obs	mean
Most important decision maker in HH is female	129.00	23.26
Second important decision maker in HH is female	128.00	76.56

8 Seasonality and Vulnerability

During qualitative interviews households identified when they have most income during a year. August, September and October were explained as a time of generating income, as this is the harvesting season for tobacco. Most households also plant tobacco which they use to sell. Other households however reported that they have most income when their business is especially lucrative which was *Lebaran* for one household (Islamic celebration in July for the year 2015) or during planting season which is generally December to April (depending on the crop).

Most households, however, report that they are short of money during the planting season. Those months are especially difficult for many households as they have to pay for agricultural inputs and also to rent cows. This does not seem to affect food security. As can be seen in table 15, only 2% of households worried that they did not have enough food to eat in the last seven days and 0.5% of the households faced a situation within the last 12 months were they did not have enough food in their household. These numbers might be low, because all the households produce maize which at least offers them enough staple food for their food consumption.

Table 15: Food Security

	Nr. Obs	mean
Worried	193.00	2.07
Did not Have Enough Food	192.00	0.52

A question asked during qualitative data collection was what the households would stop buying if they had less money. Some respondents explained that they would not know what to stop buying because all the expenditures are important. Other households reported that they would buy cheaper food because this is the only thing that they still can reduce. Another household reported that it would stop saving for the children's education while other two household explained that this was important and they would rely on their savings.

Most households also claimed that they do not have unnecessary expenditure. One household admitted that they could reduce the cost of smoking while also clothes expenditure as well as those for their children's evening activities were mentioned. During qualitative data collection it was also identified that the long dry season (which is being longer than usual because it is the year of El Niño), is affecting the households as they cannot start to plant and crops are less productive than usual.

9 Conclusion and Recommendations for Future Waves

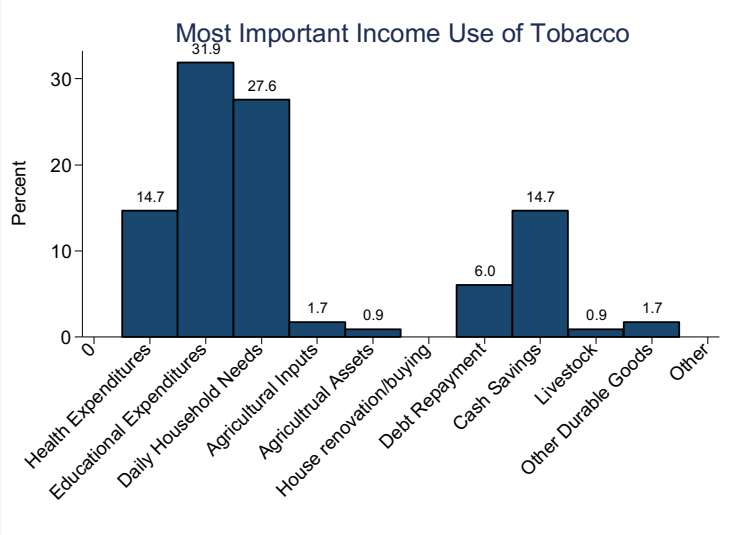
This baseline study has seen that households have very different sources of income. Around 30% of the income is reported to be gained through maize. Another key crop that is relevant for income generation is tobacco, which is a key cash crop. Maize rather is used for a mix of consumption and sales. It provides the households with staple food and increases their food security. The income from maize is mainly reported to be used for daily expenditure with households selling more maize when they have needs.

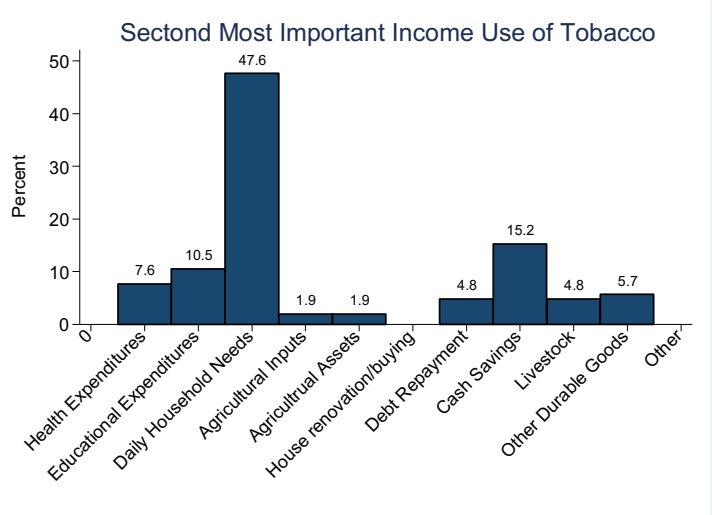
Regarding household purchasing preferences if they had more money there was a range of responses. Two households explained that they would like to open a new business – that they have ideas but need money to put these into action. Other households explained that they would buy livestock because they anticipate good returns from the cows in the future. Another household said that it would like to invest in existing business (a larger pen for their cattle as currently it is too small). Buying gold or land was mentioned often as these are assets are understood to appreciate in value.

Two respondents claimed that the money should be saved as you cannot to anticipate unexpected expenditures in the future. While households have very different ideas what they would do if they had more money, they are not considered essential for subsistence and most are related to anticipated future returns. In relation to large expenditures, here households answered that they would like to renovate their home yard, open a business, *naik haji* and buy a house while some other explained that they did not have any large expenditures planned. Other consumption preferences were more modest, one household claimed they would like to buy their grandson a toy. Savings were also mentioned.

Another indication on what additional income is used for might be given by comparing the livelihood situation across different expenditure quintiles. Households in higher expenditure quintiles tend to have more toilet facilities, better floor material, more TVs, mobile phones, motorcycles and livestock. They also tend to have more grain storage containers which might allow better storage of maize. As was discussed earlier, households in higher expenditure quintiles consume more meat and fish which indicates higher micronutrient consumption. Another area is time. As the intervention will change the type of seed used, this might also change the amount of time needed for field preparation, for instance fertiliser need to be applied differently and more water resources are needed. Understanding changes such as these will be considered in the follow up of the studies.

10 Appendix


Most Important Income Use of Tobacco
Percent
0
10
20
30
14.7
31.9
27.6
1.7
0.9
6.0
14.7
0.9
1.7
Health Expenditures
Educational Expenditures
Daily Household Needs
Agricultural Inputs
Agricultrual Assets
House renovation/buying
Debt Repayment
Cash Savings
Livestock
Other Durable Goods
Other


Sectond Most Important Income Use of Tobacco
Percent
0
10
20
30
40
50
7.6
10.5
47.6
1.9
1.9
4.8
15.2
4.8
5.7
Health Expenditures
Educational Expenditures
Daily Household Needs
Agricultural Inputs
Agricultrual Assets
House renovation/buying
Debt Repayment
Cash Savings
Livestock
Other Durable Goods
Other