Agricultural Growth Program (AGP) of Ethiopia – Baseline Report 2011

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ANNEXES

Acknowledgments

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Executive Summary

Chapter 2

- This chapter provides an overview of the demographic structure of households which are covered by the Agricultural Growth Program (AGP) baseline survey. The chapter reports descriptive analysis of demographic variables like age and size distribution of the households, marital status, education, and occupation of the household heads and household members. In the discussion, emphasis is also given to differences between genders, age groups and AGP status classification.
- The average age for the household head is about 43 years while female headed households tend to be older. Regarding marital status of heads, the majority of household heads are married. There are more female headed households who are separated or divorced compared to male heads. However, there is no notable difference across households in AGP and non-AGP woredas. The surveyed households have on average five members with relatively smaller size for households with younger heads. However, there is little difference in household size distribution across AGP classification. Detailed statistics are also computed across age cohorts.
- Regarding the educational status, about 54 percent of the household heads surveyed are illiterate. When looked across gender, the large majority of the female household members are illiterate. From those who attended formal education, the majority are households with young heads while a higher proportion of mature heads have some sort of informal education. Notable differences also exist among the different age groups. The occupational structure of households shows that about 89 percent of the household heads surveyed are farmers or family farm workers and the proportion reaches even about 97 for male headed households. Female headed households tend to diversify their occupation to non-agricultural activities.

Chapter 3

- The chapter summarises crop production and decision making of households in the production and sale of crop and livestock products. The surveyed households cultivated for the Meher season a total number of 46.9 million plots. A significant percentage of variation was observed in the proportion of plots allocated for each

crop category. Cereals took the largest proportion of plots followed by pulses and coffee. This result holds true for AGP and non-AGP woredas, except in AGP woredas enset is more important than coffee. Decision making on crop production and marketing was mostly made by the head or head and spouse. Likewise, decision on marketing of crop produced is mostly done by the head, followed by the spouse (though the percentage is much lower). However, a noticeable result was found when comparing decision making on livestock and livestock products by gender dimension. Chicken production is mainly controlled by female heads and spouses. Moreover, decisions regarding the production of milk and milk products are made by the female heads.

Chapter 4

- This chapter focuses on aspects of crop and livestock productivity of households in the study area. Accordingly, the summarized findings on output levels, yields, and labour productivity estimates for both crop production and livestock production are provided. Due emphasis is attached to major crops yields. In order to capture the output and yield estimates, crops are categorized into fifteen groups — teff, barley, wheat, maize, sorghum, other cereals, (which at some points are discussed in group as cereals), pulses, oilseeds, vegetables, fruits, root crops, coffee, chat, enset, others.
- In terms of area cultivated, the first striking feature is the predominance of cereals which accounted for 66 percent of total acreage. Among cereals, teff recorded the largest share of cultivated area (16.1 percent), followed by maize (15.2 percent) and wheat (11.5 percent). Regarding the acreage shares across AGP status groupings, on average, AGP woredas had larger acreage shares going to teff, sorghum, and oil seeds. In contrast, non-AGP woredas recorded greater shares for barley, pulses, and fruits. Although maize and wheat respectively took second and third place in terms of acreage, they ranked first and second in output with a share of 30 percent and 17 percent respectively. Teff took the third spot in output with a share of 13 percent.
- Estimates of output at the household level reveal that on average these outputs were not very high during the Meher season covered. For the study area as a whole, they range from 1.3 quintals for coffee through to 5.8 quintals for maize. The median, on the other hand, is 2 quintals, implying that half of these households

produced less than 2 quintals. The comparison among AGP groups show that, among the crops considered, average household output was higher in AGP woredas relative to non-AGP woredas for teff, wheat, maize, sorghum, pulses, oil seeds, and chat while average output was greater in non-AGP woredas for the other crops. Moreover, the only statistically significant differences between households in AGP and non-AGP woredas were observed for sorghum, pulses, and oilseeds. To complement on the perspective provided by average output levels, average plot sizes are also computed. The findings indicate that on average a household operates plots measuring a third of a hectare. Although the land sizes allocated to sorghum and oilseeds are the two highest, there was no significant difference on average plot size allotted to annual crops. When plot sizes are viewed across gender of household heads, the findings confirm that male headed and mature headed households had slightly bigger plots compared to those of their respective counterparts.

- Subsequently, average yields for each crop are considered. Among cereals, maize turned out to have the highest yields (17.2 quintals per hectare), while teff had the lowest (9.4 quintals per hectare). This ranking held across household groups and locations. A striking difference has been observed across mean and median estimates, however. For instance, the mean teff yield of 9.4 quintals per hectare is matched with a median of 6.7 quintals per hectare. In other words, half of the teff producers could only achieve teff yields of less than 6.7 quintals per hectare. Statistically significant differences in mean yields were registered across household types. Female headed households achieved lower yields in teff, barley, maize, and root crop production. These differences amounted to 1-2 quintals per hectare. However, there is no significant difference recorded between AGP and non-AGP woredas.
- Labour productivity is generally characterized in terms of a ratio of the amount of output produced to the associated amount of labour used. To do so, output per unit of labour (in adult equivalent labour (or work) day) is estimated. For all farm households, mean levels of labour productivity measured range from 9.7 kg for sorghum to 14 kg for barley. It is striking that differences of comparable magnitude were not recorded among these output levels across household types. For example, the largest labour productivity shortfall in female headed households was 1kg in oilseeds production. Similarly, the gap between labour productivity of

households in AGP and non-AGP woredas was highest in oilseeds, amounting to 2.8 kg.

- Livestock productivity indices are intrinsically more complex with corresponding data challenges. But some indicative measures are computed. On average, cattle-owning farm households in the study area owned 3.6 heads of cattle. Male headed households, mature headed households, and households in AGP woredas owned more cattle than their counterparts. Availability of grazing land is another major determinant of not only the number of animals owned but also the corresponding productivity. Farm households in the study area identified only 6 percent of their landholdings as grazing area. On average, female headed households allocated a bit more of their holdings (7.2 percent) to grazing than male headed households (5.8 percent). The average milk yield was about a litre per cow per day and displays very little variation across household groups or locations. Nevertheless, there is considerable heterogeneity (relative to the average) in cow milk yields within each group.

Chapter 5

Chapter 5 provides an overview on the intensity and magnitude of inputs used for crop production. The major inputs used during the season considered are land, labour, and modern inputs (fertilizer, improved seeds, soil conservation methods and extension services).

- *Land:* A total of 45.2 million plots of land were covered by annual and perennial crops in the study area. On average, during the survey year, a household operated 1.14 ha of land divided into 4.7 plots with the average size of a single plot being 0.25 ha. About half of the households cultivated less than 0.94 ha of land. Male headed households hold roughly 1.25 ha of land while female heads are found to possess only 0.89 ha. When we look at the difference across age, larger proportion of households with young heads operated relatively fewer plots than mature heads. The calculated statistics also reveal that AGP Woredas tend to have slightly larger cultivated areas than non AGP woredas.

Most of the plots are located at about 19 minutes walking distance from farmers' residences. Plots cultivated by households headed by male and young heads are farther away from their homes relative to those operated by female and mature headed households.

Households were asked to classify their plot as in response to the question slightly more than half of the cultivated plots were reported to be fertile while were deemed moderately fertile, only remaining 11 percent were identified as infertile.

- *Labour:* Labour use is measured as the number of adult equivalent work days per hectare of land by family members. Among cereals, median labour days were highest maize and teff and least required for cultivating barley and wheat required. The data show that male headed households used more labour for all crops except vegetables.
- *Fertilizer:* Although the percentage of households who use fertilizer has increased over time, the baseline survey indicates that fertilizer application is still low. About 58 percent of households in the study area used chemical fertilizers. Even among farmers who are using fertilizer, a large proportion of them only apply small quantities. On average, farm households in the study area applied 27 kg of chemical fertilizer made up of DAP and urea separately or together. On average, male-headed and mature–headed households applied more chemical fertilizers compared to female-headed and young-headed households, respectively. The gap narrows down considerably when we compare actual users. Relative to households headed by the young, those with mature heads used 10 percent more fertilizer. AGP Woreda households on average used 16 percent more fertilizer than those in non-AGP Woredas. Nevertheless, a large majority (98 percent) of households reported that they have applied manure in their fields.

  The recent trend in fertilizer application is improving over time in both AGP and non-AGP Woredas. The adoption is increasing at an average annual rate of 6.2 percent although the growth rate is slower for female headed households.

- *Improved seeds:* Out of all plots, about 90 percent were planted with local seeds; about 1.3 percent with seeds saved from output produced using previously bought improved seeds, and 6.3 percent with freshly bought improved seeds. The remaining 2.1 percent were sown with a combination of the three types. While 76

percent of the total improved seed was newly bought, the remaining 24 percent was saved from the output of previously used improved seeds. Although 23.5 percent of the households used improved seeds, the amount used in the study area averaged less than a kilogram per hectare. However, the application rate of improved seeds among users was significantly large at about 17.5 kg per hectare.

The proportion of female-headed households that applied improved seeds is 9 percentage points lower than applied by male headed households. Slightly more households with mature-heads applied improved seeds. Relative to households in non AGP Woredas more households in AGP Woredas used improved seeds and average improved seeds application was slightly larger among households in AGP Woredas.

- *Irrigation and soil conservation:* Among households in the study area only 4.2 percent irrigated their plots while a significantly large proportion (72 percent) practiced some soil conservation measures. Relative to female-headed households, the proportions of households with male heads that used irrigation and soil conservation measures were larger. A relatively larger proportion of AGP households of all categories irrigated their land relative to the corresponding categories of non-AGP households.
- *Extension services*: About 35.5 percent of the households were visited by an extension agent at least once and a quarter said they were visited more than once. Comparatively, female headed households were less visited than their male counter parts. Relative to households with mature heads those with young heads were also visited more. Information provided on new inputs and production methods were selected by respondents as by far the two most important services visited households received – 35 percent and 34 percent of the households selecting the two as most important, respectively. All household groups in all locations identified the two as important, though the order in which they did so was not always the same. Extension agents' help in obtaining fertilizer was the third important support.

- *Sales income.* Combining sales revenue from three sources (crops, livestock, and livestock products), it is found that total sales income for an average household in the survey area over a 12 month period amounts to 4,968 Birr. The majority of the sales revenue is made up from crop sales revenue, as this category accounts for 70% of the sales income of the average household (3,469 Birr). The revenue from the sales of livestock comes second, making up 26% of the sales income (1,344 Birr). Sales revenue from livestock products (meat, hides and skins, milk, cheese, butter, yoghurt, dung, and eggs) are estimated to be relatively less important as they make up only 3% of the annual sales revenue of an average household (155 Birr).
- *Crop utilization.* One of the salient features of crop production in countries such as Ethiopia is that households consume a significant fraction of the output they harvest. This is also found in this dataset. We, however, note significant differences between crops. For only two crops more than half of the production is sold, i.e. chat (81%) and oilseeds (68%). Even for a major cash crop as coffee, the majority of the production is consumed by the household itself (64%) and only 35% of the coffee production is put up for sale. We note also large differences between the major cereals. Of all the cereals, teff is used most as a cash crop. A quarter of total production is being sold. This compares to 58% of its production being used for own consumption. Sorghum, maize, and barley show the lowest level of commercialization with a share of production that is being sold ranging from 10% to 13%. Farmers in the study area further rely little on markets to obtain seeds, as illustrated by relatively large percentages of the production being retained for seed purposes, in the case of cereals varying between 6% (maize) and 19% (barley) of total household production.
- *Crop sales.* The average revenue from crop sales in the survey area in the year prior to the survey amounts to 3,469 Birr per household. There are large differences between households and it is estimated that half of the households earned less than 597 Birr from crop sales income. Coffee is the most important crop in total crop sales, accounting for 40% of total crop sales followed by wheat accounting for 11% of the total crop sales. This high contribution of coffee to total crop sales could be driven by the high price of coffee relative to other crops. However, the percentage of households who are marketing coffee is only 10 percent and mainly

concentrated in SNNP (Southern Nations, Nationalities, and Peoples) and Oromiya regions. Most of the crops are being sold to village traders and few farmers travel far distances to sell produce as it is found that transportation costs make up a relatively small percentage of total earnings from sales. Most importantly, most farmers chose traders because they are able to pay immediately and not because they offer higher prices. This might reflect lack of trust in traders as well as a relative large importance of distress sales. It is also found that relatively few farmers use mobile phones to find traders and agree on prices, partly reflecting the still relatively low penetration of mobile phones in rural areas of Ethiopia.

- *Livestock sales.* The revenue from livestock sales for an average household in the survey made up 1,344 Birr in the year prior to the survey. The revenue from livestock sales compares to 38% of the revenue from crop sales. Within the sales of livestock, it is especially the sales of cattle that are important as they account for 77% of the total sales. Second come the sales of goats and sheep accounting for 13% of total livestock sales income. Pack animals and chicken each count for 5% of total livestock sales income. As for the case of crops, expenses for transportation are relatively less important compared to sales income. The most important reason for choosing a buyer is linked to cash payments, followed by the prices offered. No choice in traders is relatively less important as the reason for the choice of selling to a particular trader but it still makes up 10% of the stated answers for choosing a trader. It thus seems that farmers in these surveyed areas might benefit from improved choices in sales options.
- *Livestock products.* The revenues that were generated from the sales of livestock products amounted to 155 Birr in the year prior to the survey for an average household. The most important livestock product was the butter/yoghurt category accounting for 55% of all livestock products sales income. Egg comes second, accounting for 30% of the livestock product sales. Meat (6%), hides and skins (4%), fresh milk or cream (4%), and dung (1%) are relatively much less important. While sales to village traders are still relatively most important, direct sales to consumers for these products are much more important than for crop and livestock sales, reflecting the more perishable nature of the majority of these products. They are thus probably relatively more important for the local economy. The most important reason for the choice of a buyer is again cash payments (and less the level of the price offered).

Chapter 7

- This chapter describes wage employment and nonfarm business activities of the household in the four regions. Of all the household members, head of the household takes the largest percentage in the participation of nonfarm business. In terms of age categories, the involvement of younger household heads in nonfarm business and wage employment is higher than the matured ones. Although there is no considerable difference between male and female headed households in the percentage of households participating in nonfarm and wage employment, female headed households involved more in selling traditional food/liquor. It was noted in the survey results that households with young heads are more engaged in livestock trade than those with matured heads. The major market for selling products/service for AGP and non-AGP woredas was found to be the same village they are living in. Male headed households appear to have a better access to markets outside their own villages while female heads use their own village as a market place for their products.
- The survey results revealed that relatives and friends account for the largest share of credit source. However, microcredit institutions were found to be one of the main sources of credit for households living in AGP woredas in order to finance nonfarm business. Households in the study area were asked to prioritize their reason for not receiving credit and a large percentage of the households indicated that they were not interested to take the loan, followed by lack of an institution to provide loan in their area.

Chapter 8

- Most rural households rely on own production to satisfy their food requirements. Reliance on own-produced food varies mainly with cropping seasons. The largest proportions of the households rely on own-produced food during and after harvest. The smallest proportions of households rely on own-produced food during the raining and planting months in the main agricultural season, during which a considerable proportion of food is purchased and obtained from other sources to cover the food need. Moreover, the data indicate that an average household was food insecure for 1.2 months during the year. Male headed and households in AGP woredas performed relatively better.

- The data also indicate that the food items consumed by household members were less than half as diverse as required for a healthy diet. Although dietary diversity varied among the different categories and woredas, the variation was small. Long- and short-term nutritional status of children under the age of 5 was examined using anthropometric measures collected in the survey. The results indicate a prevalence of severe stunting, wasting, and underweight in 27, 6, and 10 percent of the children. The proportion with moderate stunting, wasting, and underweight was 46, 12, and 27 percent, respectively. Children in households with female and mature heads and those in non-AGP woredas performed better in all or most measures. Diarrhoea, coughing, fever, and breathing problems affected 25, 37, 32, and 15 percent of the children in the 2 weeks prior to the survey.
- Less than half of the households have access to safe drinking water and more than 40 percent use the same water for drinking and other purposes. While there were differences among household categories in access to safe water the differences were small. Although about 58 percent of the households do not have access to safe drinking water, less than 10 percent boil the water they drink. The practice is more prevalent in male and mature headed households.

Log-frame Indicators

The AGP has a set of outcome indicators that defines its intermediate and ultimate objectives. These are identified in the program's log frame. The primary objective of the AGP baseline survey (as well as the planned follow-on surveys and analyses) is to assess the impact of AGP interventions on the log frame indicators as rigorously as possible. Ideally, this assessment will answer whether AGP interventions are directly and exclusively responsible for the recorded changes in these indicators. Nevertheless, there is considerable cost involved in achieving this ideal. Moreover, not all indicators are equally important and, in a lot of cases, it may be sufficient to credibly establish that AGP interventions contributed to changes in the relevant indicators without ascertaining causality.

Accordingly, the degree of answerability reported below expresses the possible type of link that can be credibly established between the AGP interventions and the indicators identified as well as the nature of the analysis used to do so. These reflect the survey

sample size as per the decision of the AGP-TC and the survey data collected. The latter, in turn, reflect the instruments of data collection used (the questionnaires were shared with AGP-TC members), the characteristics of sample households actually drawn, and the circumstances of data collection.

The manner of coverage is summarized by three possibilities identified under the 'Answerability' column in the tables below. 'Answerability' identifies the type of analysis possible for the corresponding key indicator. The following are the options:

1. *Impact Assessment (IA)* — Movements in the indicators are tracked and the impact originating from AGP interventions/investments will be identified and measured.
2. *Track Changes (TC)* — Movements in the indicators as well as their correlates will be tracked without necessarily causally identifying those movements with AGP interventions/investments. There are two sub-options. It is possible to conduct systematic analysis of the movements of indicators and correlates (TC-A). Or, it is possible to have descriptive analysis only (TC-D).
3. *Not Feasible (NF)* — Movements in the indicator cannot be tracked and/or analysed with reasonable confidence given the data available.

Similarly, the extent of coverage in the proposed evaluation work categorizes the indicators into three groups. These are:

1. Indicators to be fully addressed – all defining characteristics of the indicator will be examined;
2. Indicators to be partially covered – key aspects of the indicator will be studied; and
3. Indicators to be not covered, because they are either infeasible or have low level of answerability.

Tables ES.0.1-ES.0.3 collect the log-frame indicators by the extent of coverage. They also report on the manner in which these indicators are tracked. The baseline levels of the indicators are subsequently reported via summary tables while additional tables are included in the annex to the Executive Summary.

Table ES.0.1. Indicators to be fully addressed in the evaluation work

Development objective	PDO indicators	Available indicator	Answerability	Reference table	Remark
Agricultural productivity and market access increased for key crop and livestock products in targeted woredas, with increased participation of women and youth.	1. Percentage increase in agricultural yield of participating households (index for basket crops and livestock products).	yield	IA (teff, wheat, barley, maize sorghum, pulses, and oil seeds), TC-A by household type	PDO 1, ES.11,	Attribution to AGP can only be achieved with detailed information about the nature and implementation of the relevant AGP interventions.
		yield	TC-A (Others crops and milk)	PDO 1, ES.12, ES.22	Systematic analysis can only be achieved with detailed information about the nature and implementation of the relevant AGP interventions.
	2. Percentage increase in total real value of marketed agricultural (including livestock) products per participating household.	marketed output	IA possible, TC-A more likely	PDO 2, ES.28, ES.29, ES.30	Attribution to AGP and/or systematic analysis can only be achieved with detailed information about the nature and implementation of the relevant AGP interventions.
Intermediate outcome for each component	**Outcome indicators for components**	**Available indicator**	**Answerability**	**Reference table**	**Remark**
Component 1: Agricultural production and commercialization					
Sub-component 1.1: Institutional strengthening and development					
Farmers have improved access to and quality of services through support from key public institutions and private organizations (groups).	1. Percentage of farmers satisfied with quality of extension services provided (disaggregated by service providers, type of service/technology, crop, and livestock).	percentage of households who received crop level extension advice and the percentage of households satisfied with the advice received (by key types of advice/information)	IA possible, TC-A more likely (teff, wheat, barley, maize, sorghum, pulses, and oil seeds)	IO 1.1, ES.13, ES.14, ES.15, E.16, ES.17, ES.18, ES.19, ES.20, ES.21	Attribution to AGP and/or systematic analysis can only be achieved with detailed information about the nature and implementation of the relevant AGP interventions.

Sub-component 1.2: Scaling up best practices					
Sub-projects for improved productivity, value addition, and marketing realized and sustainably managed.	3. Number of farm households with innovative best practices (improved/new techniques and technologies).	Percentage of households that used chemical fertilizers, improved seeds, irrigation, water harvesting, soil conservation, and row planting	IA possible, TC-A more likely (chemical fertilizers, improved seeds, and irrigation)	IO 1.1, ES.3	Attribution to AGP and/or systematic analysis can only be achieved with detailed information about the nature and implementation of the relevant AGP interventions.
Component 2: Rural infrastructure development					
Sub-component 2.1: Small-scale agricultural water development and management					
Demand driven infrastructure investments for improved agricultural productivity realized and sustainable managed.	1. Number of farmers benefiting from the irrigation investments (disaggregated by type of investments).	Percentage of farmers using irrigation on their plot and the percentage of farm land under irrigation	IA possible, TC-A more likely	IO 2.3	Attribution to AGP and/or systematic analysis can only be achieved with detailed information about the nature and implementation of the relevant AGP interventions.
	3. Percentage increase in area under irrigation.	Percentage of farm land under irrigation	TC-A	IO 2.3	

Notes:

'Answerability' identifies the type of analysis possible for the corresponding key indicator. The following are the options:

1. *Impact Assessment (IA)* — Movements in the indicators are tracked and the impact originating from AGP interventions/investments will be identified and measured.
2. *Track Changes (TC)* — Movements in the indicators as well as their correlates will be tracked without necessarily causally identifying those movements with AGP interventions/investments. There are two sub-options. It is possible to conduct systematic analysis of the movements of indicators and correlates (TC-A). Or, it is possible to have descriptive analysis only (TC-D).
3. *Not Feasible (NF)* — Movements in the indicator cannot be tracked and/or analysed with reasonable confidence given the data available.

Table ES.0.2. Indicators to be partially covered in the evaluation work

Intermediate outcome for each component	Outcome indicators for components	Available indicator	Answerability	Reference table	Remark
Component 1: Agricultural production and commercialization					
Sub-component 1.1: Institutional strengthening and development					
Farmers have improved access to and quality of services through support from key public institutions and private organizations (groups).	1. Percentage of farmers satisfied with quality of extension services provided (disaggregated by service providers, type of service/technology, crop, and livestock).	Percentage of households who received crop level extension advice and the percentage of households satisfied with the advice received (by key types of advice/information)	TC-A (Other crops, livestock)	ES.23, ES.24, ES.25	Systematic analysis can only be achieved with detailed information about the nature and implementation of the relevant AGP interventions.
	2. Share of households that are members of functioning farmer organizations (disaggregated by group type).	Community level availability of functioning farmer organizations and their services	TC-A	IO 1.2, ES.1, ES.6	Attribution to AGP and/or systematic analysis can only be achieved with detailed information about the nature and implementation of the relevant AGP interventions.
Sub-component 1.2: Scaling up best practices					
Sub-projects for improved productivity, value addition, and marketing realized and sustainably managed.	4. Number of sub-projects fully operational and sustainably managed 2 years after initial investments (disaggregated by type of investments).	Community level information on community level public work projects undertaken since 2009 and completed	TC-D	ES.26, ES.27	Requires detailed information on the relevant AGP sub-projects.
Sub-component 1.3: Market and agribusiness development					
Key selected value chains strengthened.	5. Percentage real sales value increase of the key selected value chains commodities supported at the end of the value chain.	Marketed output	TC-A		Systematic analysis can only be achieved with detailed information about the nature and implementation of the relevant AGP interventions.

Component 2: Rural infrastructure development					
Sub-component 2.1: Small-scale agricultural water development and management.					
Demand driven infrastructure investments for improved agricultural productivity realized and sustainably managed.	4. Percentage increase in areas treated under sustainable land management.	Percentage of farmers practicing soil conservation measures	TC-D		
Sub-component 2.2: Small-scale market infrastructure development and management					
Demand-driven infrastructure investments for improved access to market realized and sustainably managed.	5. Percentage decrease in time for farmers to travel to market centre.	Community level information on travel to the nearest city centre	TC-A	IO 2.5	

Notes:

'Answerability' identifies the type of analysis possible for the corresponding key indicator. The following are the options:

1. *Impact Assessment (IA)* — Movements in the indicators are tracked and the impact originating from AGP interventions/investments will be identified and measured.
2. *Track Changes (TC)* — Movements in the indicators as well as their correlates will be tracked without necessarily causally identifying those movements with AGP interventions/investments. There are two sub-options. It is possible to conduct systematic analysis of the movements of indicators and correlates (TC-A). Or, it is possible to have descriptive analysis only (TC-D).
3. *Not Feasible (NF)* — Movements in the indicator cannot be tracked and/or analysed with reasonable confidence given the data available.

Table ES.0.3. Indicators that will not be covered in the evaluation work due to low level of answerability

Intermediate outcome for each component	Outcome indicators for components	Available indicator	Answerability	Reference table	Remark
Component 2: Rural infrastructure development					
Sub-component 2.1: Small-scale agricultural water development and management					
Demand driven infrastructure investments for improved agricultural productivity realized and sustainably managed.	2. Percentage of infrastructures utilized one year after the investment is completed (disaggregated by type of infrastructures).	No indicator available in the baseline survey to measure this	NF		Not enough information will be generated by the surveys in question.
Sub-component 2.2: Small-scale market infrastructure development and management					
Demand-driven infrastructure investments for improved access to market realized and sustainably managed.	6. Percentage of users satisfied with the quality of market centres.	No suitable indicator available in the baseline survey	NF		Not enough information will be generated by the surveys in question.
	7. Percentage of road and market centre investments sustainably managed one year after the investment is completed.	No suitable indicator available in the baseline survey	NF		Not enough information will be generated by the surveys in question.

Notes:

'Answerability' identifies the type of analysis possible for the corresponding key indicator. The following are the options:

1. *Impact Assessment (IA)* — Movements in the indicators are tracked and the impact originating from AGP interventions/investments will be identified and measured.
2. *Track Changes (TC)* — Movements in the indicators as well as their correlates will be tracked without necessarily causally identifying those movements with AGP interventions/investments. There are two sub-options. It is possible to conduct systematic analysis of the movements of indicators and correlates (TC-A). Or, it is possible to have descriptive analysis only (TC-D).
3. *Not Feasible (NF)* — Movements in the indicator cannot be tracked and/or analysed with reasonable confidence given the data available.

Log-frame Indicators – Baseline Levels

The following tables report on the level of AGP log-frame indicators estimated from the AGP Baseline Survey. The details regarding data collection and estimation of levels are to be found in the relevant chapters. Two important caveats – one pertaining to disaggregation and the other to yield estimates – need to be declared at this juncture, however.

Disaggregation

The AGP log-frame (included in the project appraisal document as well as the project implementation manual) identifies two project development objective (PDO) indicators and twelve component-level outcome indicators.[1] A number of these indicators were to be disaggregated by region, commodity, and gender and age of household heads. Further, the impact of AGP on all these has to be rigorously assessed. A survey that can generate information of sufficient quantity and quality for a rigorous evaluation of AGP's impact on each and every one of these indicators will be very large, very expensive as a consequence, and of doubtful value.

Instead, a sample stratification design reflecting the population shares of the household types of AGP interest – namely, female and youth-headed households – was implemented.[2] As a consequence, it become possible to report all household-level data below as disaggregated by gender and age of household heads (female, youth). Nevertheless, the stratification and subsequent disaggregation were implemented with an explicit understanding that it is unlikely allow a rigorous impact comparison across household types. In other words, although some useful conclusions could be inferred from systematic assessments, the AGP survey's sample size is not large enough to ensure that these results would necessarily and conclusively establish AGP interventions as the source of the changes in those targets as disaggregated by household type (such as female-headed or youth-headed ones).

[1] See MoARD (June, 2010) and World Bank (September, 2010).

[2] See Chapter 1 below for details.

Yield estimates

Yield estimates reported here are based on responses of farmers to interview questions. This contrasts with CSA's use of crop cut samples to estimate yields in the context of its annual Agricultural Sample Survey (AgSS). Any comparison between the AGP baseline estimates and the AgSS estimates should allow for this difference.

'National' vs. 'Regional'

'National' identifies data and estimates applicable to all woredas in the AGP baseline survey and areas of the country that these woredas represent, namely, all AGP woredas and non-AGP - non-PSNP woredas in Tigray, Amhara, Oromiya, and SNNP. Similarly, 'Regional' applies to the analogous data and estimates for each of the four regions named in the previous sentence.

Sample weights

Each household in the sample represents a number of households residing in AGP woredas and non-AGP - non-PSNP woredas in Tigray, Amhara, Oromiya, and SNNP (i.e., the population of interest). This number, which constitutes the household's sampling weight, is determined by the probability of selection into the sample that the household has. All the estimates are calculated using these weights so as to represent the corresponding population.

Crop Yield

Crop yield index was calculated a weighted sum of the yields of the following crops: wheat, teff, sorghum, barley, rice, finger millet, chickpeas, haricot beans, horse beans, field peas, grass peas, niger seed and potatoes. The weight attached to each crop was the proportion of land allocated to it out of total household cultivated land.

Conversion of units – Milk production

Crop yields are computed in quintals per hectare, while milk yield is calculated in litres per day per cow. To aggregate the two into an index requires that both are expressed in the same unit. Accordingly, daily milk yield was converted into annual yield in quintals/ha.

i. The daily milk yield (litre/cow) was converted to annual yield by multiplying it by the country-level average lactation period per cow, which is estimated to be about 6 months or 180 days (CSA 2008)

Annual milk yield (litre/cow) = Daily milk yield (litre/cow)*180

ii. There is no information on fodder provided to cows. Also, the data on grazing land do not allow credible estimates of stocking rates or number of cows per unit land area during a given time period – only a third of cow-owning households report any grazing land and, on average, grazing land amounted to about 6% of total cultivated land in the AGP data . Since most farmers in Ethiopia do not apply chemical fertilizers to grazing land, a stocking rate of 2 cows per hectare per year (Miller*, et al*. (2007)) was used to compute an estimate of milk yield per hectare.

Annual milk yield (litre/ha) = [(Annual milk yield (litre/cow)*(2 cows/ha)]

iii. Annual milk yield per hectare is multiplied by milk density of 1.03 kg per litre (Jones (2002)) and divided by 100 to convert it into annual milk yield in quintals per hectare.

Annual milk yield (quintal/ha) = [(Annual milk yield (litre/ha)*(1.03kg)]/100

PDO 1 (National) – Agricultural yield[1], by AGP Status

Group	Category	Quintal/ha
Total	All households	9.61
	Female HHHs	8.48
	Youth HHHs	9.78
AGP	All households	9.93
	Female HHHs	9.44
	Youth HHHs	10.28
Non AGP	All households	9.52
	Female HHHs	8.17
	Youth HHHs	9.63

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Notes: 'HHHs' stands for 'Household Heads''. [1] Baseline agricultural yield is defined as a productivity index of the following agricultural commodity basket: crops (include wheat, teff, sorghum, barley, rice, finger millet, chickpeas, haricot beans, horse beans, field peas, grass peas, niger seed and potatoes), weighted 75%, and livestock products (only milk in the present case), weighted 25%.

PDO 1 (Regional) – Agricultural yield[1], by region

Group	Category	Quintal/ha
Tigray	All households	7.64
	Female HHHs	7.00
	Youth HHHs	7.85
	AGP HHHs	8.34
	Female HHHs	7.23
	Youth HHHs	8.68
	Non-AGP	6.47
	Female HHHs	6.63
	Youth HHHs	6.40
Amhara	All households	11.21
	Female HHHs	9.20
	Youth HHHs	12.07
	AGP HHHs	12.18
	Female HHHs	11.39
	Youth HHHs	12.43
	Non-AGP	10.96
	Female HHHs	8.75
	Youth HHHs	11.98
Oromiya	All households	10.18
	Female HHHs	8.91
	Youth HHHs	10.27
	AGP HHHs	10.68
	Female HHHs	10.25
	Youth HHHs	11.25
	Non-AGP	10.02
	Female HHHs	8.51
	Youth HHHs	9.96
SNNP	All households	6.52
	Female HHHs	6.48
	Youth HHHs	5.78
	AGP HHHs	4.87
	Female HHHs	5.26
	Youth HHHs	4.52
	Non-AGP	6.87
	Female HHHs	6.73
	Youth HHHs	6.05

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Notes: HHHs' stands for 'Household Heads''. [1] Baseline agricultural yield is defined as a productivity index of the following agricultural commodity basket: crops (include wheat, teff, sorghum, barley, rice, finger millet, chickpeas, haricot beans, horse beans, field peas, grass peas, niger seed and potatoes), weighted 75%, and livestock products (only milk in the present case), weighted 25%.

PDO 2 (National) – Total value of marketed agricultural products per household at current and constant prices (in ETB), by AGP Status

Group	Category	Total value of marketed agricultural output *	
		Constant (2006) prices	Current (2011) prices
Total	All households	2,334.32	4,885.72
	Female HHHs	1,763.55	3,691.11
	Youth HHHs	2,154.32	4,508.98
AGP	All households	2,766.26	5,789.79
	Female HHHs	1,814.04	3,796.78
	Youth HHHs	2,561.30	5,360.80
Non AGP	All households	2,201.36	4,607.45
	Female HHHs	1,748.04	3,658.65
	Youth HHHs	2,033.53	4,256.18

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' stands for 'Household Heads'. * Sales of crops, livestock, and livestock products are included. 'Total value of marketed agricultural output at constant prices' (or real total value) is 'total value of marketed agricultural output at current or 2011 prices' (nominal total value) deflated by the respective regional Consumer Price Index (CPI) for 2011 (with December 2006 as the base). In other words, real total value is total value at constant 2006 prices.

PDO 2 (Regional) – Total value of marketed agricultural products per household at current and constant prices (in ETB), by AGP Status and by Region

Group	Category	Total value of marketed agricultural output[1]	
		Constant (2006) prices	Current (2011) prices
Tigray	All households	1,451.78	3,492.97
	Female HHHs	726.37	1,747.64
	Youth HHHs	1,353.11	3,255.59
	AGP HHHs	1,808.29	4,350.74
	Female HHHs	869.99	2,093.19
	Youth HHHs	1,694.97	4,078.09
	Non-AGP HHHs	880.09	2,117.51
	Female HHHs	501.26	1,206.04
	Youth HHHs	753.35	1,812.56
Amhara	All households	1,600.52	3,926.07
	Female HHHs	879.54	2,157.50
	Youth HHHs	1,655.76	4,061.58
	AGP HHHs	2,543.06	6,238.12
	Female HHHs	1,137.96	2,791.42
	Youth HHHs	2,060.73	5,054.98
	Non-AGP HHHs	1,316.18	3,228.58
	Female HHHs	802.37	1,968.21
	Youth HHHs	1,538.21	3,773.23
Oromiya	All households	2,163.49	5,728.92
	Female HHHs	1,525.46	4,039.41
	Youth HHHs	1,813.32	4,801.67
	AGP HHHs	1,951.12	5,166.56
	Female HHHs	1,449.94	3,839.45
	Youth HHHs	1,751.34	4,637.54
	Non-AGP HHHs	2,232.09	5,910.57
	Female HHHs	1,550.24	4,105.04
	Youth HHHs	1,832.44	4,852.30
SNNP	All households	1,684.12	4,547.13
	Female HHHs	1,525.46	4,039.41
	Youth HHHs	1,813.32	4,801.67
	AGP HHHs	2,648.42	7,150.72
	Female HHHs	2,045.46	5,522.75
	Youth HHHs	2,889.09	7,800.53
	Non-AGP HHHs	1,466.45	3,959.42
	Female HHHs	1,718.82	4,640.82
	Youth HHHs	1,432.58	3,867.96

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' stands for 'Household Heads'. [1] Sales of crops, livestock, and livestock products are included. 'Total value of marketed agricultural output at constant prices' (or real total value) is 'total value of marketed agricultural output at current or 2011 prices' (nominal total value) deflated by the respective regional Consumer Price Index (CPI) for 2011 (with December 2006 as the base). In other words, real total value is total value at constant 2006 prices.

IO 1.1 (National) – Percentage of farmers satisfied with quality of extension services provided, by AGP Status

Group	Category	Level of Satisfaction (%)	Percentage of households visited by extension agents
Total	All households	91.9	26.97
	Female HHHs	92.3	20.11
	Youth HHHs	91.7	26.95
AGP	All households	92.0	27.90
	Female HHHs	91.7	22.15
	Youth HHHs	92.7	28.09
Non AGP	All households	91.9	26.68
	Female HHHs	92.5	19.47
	Youth HHHs	91.4	26.61

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' stands for 'Household Heads'. The "level of satisfaction" is calculated using the response of households on how satisfied they were by the last expert visit. More specifically, it captures the fraction of households who replied 'strongly agree' or 'agree' to the question "The information provided (*during the most recent visit*) was satisfactory?" Interestingly, fewer households reported a visit in response to this question than when asked "How many times were you visited by an extension agent during the last main season?"

IO 1.1 (Regional) – Percentage of farmers satisfied with quality of extension services provided by region

Group	Category	Level of Satisfaction (%)	Percentage of households visited by extension agent
Tigray	All households	87.4	24.04
	Female HHHs	87.1	20.26
	Youth HHHs	86.9	21.50
	AGP HHHs	85.9	24.30
	Female HHHs	85.4	20.58
	Youth HHHs	85.1	22.02
	Non-AGP	90.1	23.58
	Female HHHs	90.3	19.70
	Youth HHHs	90.2	20.57
Amhara	All households	90.5	23.07
	Female HHHs	90.2	16.60
	Youth HHHs	90.1	21.59
	AGP HHHs	89.4	23.53
	Female HHHs	87.8	20.04
	Youth HHHs	89.5	22.11
	Non-AGP	90.9	22.93
	Female HHHs	91.1	15.54
	Youth HHHs	90.3	21.44
Oromiya	All households	94.3	28.67
	Female HHHs	94.4	22.53
	Youth HHHs	94.2	30.15
	AGP HHHs	94.8	32.71
	Female HHHs	94.5	25.63
	Youth HHHs	95.7	35.40
	Non-AGP	94.2	27.36
	Female HHHs	94.4	21.52
	Youth HHHs	93.6	28.53
SNNP	All households	89.5	28.57
	Female HHHs	90.3	19.55
	Youth HHHs	88.8	27.77
	AGP HHHs	89.2	24.10
	Female HHHs	91.1	17.46
	Youth HHHs	89.4	22.13
	Non-AGP	89.6	29.57
	Female HHHs	90.2	20.02
	Youth HHHs	88.7	29.01

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' stands for 'Household Heads'. The "level of satisfaction" is calculated using the response of households on how satisfied they were by the last expert visit. More specifically, it captures the fraction of households who replied 'strongly agree' or 'agree' to the question "The information provided (during the most recent visit) was satisfactory?" Interestingly, fewer households reported a visit in response to this question than when asked "How many times were you visited by an extension agent during the last main season?"

IO 2.3 (National) – Area under irrigation (level and per cent of cultivated land) by AGP Status

		Total land under irrigation (hectare)	Total land size cultivated by households (ha)	Percentage of irrigated land
Total	All households	179,645	11,690,413	1.54
	Female HHHs	23,339	2,767,548	0.84
	Youth HHHs	69,765	3,935,530	1.77
AGP	All households	70,603	3,057,938	2.31
	Female HHHs	15,094	660,839	2.28
	Youth HHHs	20,635	1,016,151	2.03
Non AGP	All households	109,042	8,632,241	1.26
	Female HHHs	8,244	2,106,710	0.39
	Youth HHHs	49,130	2,919,379	1.68

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' stands for 'Household Heads'.

IO 2.3 (Regional) – Area under irrigation (level per cent of cultivated land), by region and AGP status

		Total land under irrigation (Ha)	Total land size cultivated by households (Ha)	Percentage of irrigated land
Tigray	All households	15,265	428,142	3.57
	Female HHHs	1,244	89,063	1.40
	Youth HHHs	5,461	137,944	3.96
	AGP HHHs	10,728	290,751	3.69
	Female HHHs	923	54,907	1.68
	Youth HHHs	4,701	100,111	4.70
	Non-AGP	4,537	137,391	3.30
	Female HHHs	320	34,156	0.94
	Youth HHHs	760	37,833	2.01
Amhara	All households	88,188	3,457,115	2.55
	Female HHHs	9,211	778,965	1.18
	Youth HHHs	36,946	1,091,229	3.39
	AGP HHHs	25,661	863,402	2.97
	Female HHHs	4,588	166,325	2.76
	Youth HHHs	8,721	280,657	3.11
	Non-AGP	62,527	2,593,712	2.41
	Female HHHs	4,623	612,640	0.75
	Youth HHHs	28,225	810,572	3.48
Oromiya	All households	65,237	5,566,024	1.17
	Female HHHs	10,422	1,345,265	0.77
	Youth HHHs	23,105	1,875,358	1.23
	AGP HHHs	31,598	1,320,918	2.39
	Female HHHs	9,321	298,969	3.12
	Youth HHHs	7,011	432,417	1.62
	Non-AGP	33,639	4,244,873	0.79
	Female HHHs	1,102	1,046,296	0.11
	Youth HHHs	16,093	1,442,941	1.12
SNNP	All households	10,955	2,239,132	0.49
	Female HHHs	2,462	554,255	0.44
	Youth HHHs	4,254	831,000	0.51
	AGP HHHs	2,617	582,867	0.45
	Female HHHs	262	140,637	0.19
	Youth HHHs	201	202,967	0.10
	Non-AGP	8,338	1,656,265	0.50
	Female HHHs	2,199	413,618	0.53
	Youth HHHs	4,053	628,033	0.65

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' stands for 'Household Heads'.

IO 2.4 (National) – Percentage of households practicing soil conservation and water harvesting, by AGP status

Group	Category	Soil conservation (%)	Water harvesting (%)
Total	All households	72.4	15.3
	Female HHHs	66.4	10.6
	Youth HHHs	70.8	15.8
AGP	All households	71.0	19.8
	Female HHHs	66.2	15.1
	Youth HHHs	71.1	19.1
Non AGP	All households	72.8	13.9
	Female HHHs	66.4	9.2
	Youth HHHs	70.7	14.9

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' stands for 'Household Heads'. The three most common types of soil conservation activities adopted by households are fanya juu (34.7 percent), stone bunds (29.1 percent) and soil bunds (22.2 percent). Fanya Juu is an embankment along the contour which is made of soil or stones, with a purpose of conserving soil moisture and controlling erosion.

IO 2.4 (Regional) – Percentage of households practicing soil conservation and water harvesting, by region.

Group	Category	Soil conservation	Water harvesting
Tigray	All households	84.6	32.5
	Female HHHs	80.5	23.4
	Youth HHHs	86.7	31.6
	AGP HHHs	80.1	33.8
	Female HHHs	73.5	23.0
	Youth HHHs	82.8	33.3
	Non-AGP	92.3	30.3
	Female HHHs	92.2	24.2
	Youth HHHs	93.6	28.6
Amhara	All households	88.2	15.0
	Female HHHs	81.2	9.7
	Youth HHHs	87.9	13.0
	AGP HHHs	81.3	12.4
	Female HHHs	75.5	8.3
	Youth HHHs	80.9	12.4
	Non-AGP	90.3	15.7
	Female HHHs	83.0	10.1
	Youth HHHs	89.9	13.2
Oromiya	All households	76.1	17.0
	Female HHHs	70.2	12.3
	Youth HHHs	73.3	19.1
	AGP HHHs	80.1	26.7
	Female HHHs	75.5	22.4
	Youth HHHs	80.3	25.7
	Non-AGP	74.8	13.9
	Female HHHs	68.5	9.0
	Youth HHHs	71.1	17.1
SNNP	All households	47.5	10.5
	Female HHHs	42.4	7.0
	Youth HHHs	46.4	11.4
	AGP HHHs	32.2	7.7
	Female HHHs	28.5	3.7
	Youth HHHs	32.0	7.4
	Non-AGP	50.9	11.1
	Female HHHs	45.4	7.7
	Youth HHHs	49.6	12.3

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' stands for 'Household Heads'. The three most common types of soil conservation activities adopted by households are fanya juu (34.7 percent), stone bunds (29.1 percent) and soil bunds (22.2 percent). Fanya Juu is an embankment along the contour which is made of soil or stones, with a purpose of conserving soil moisture and controlling erosion.

IO.2.5.Community level information on travel time to the nearest market centre (with a population of 50,000 or more) in hours

	Category	Travel time to the nearest market centre
National	All woredas	3.1
	AGP woredas	1.9
	Non-AGP woredas	3.5
Tigray	All woredas	1.9
	AGP woredas	2.0
	Non- AGP woredas	1.5
Amhara	All woredas	4.5
	AGP woredas	2.5
	Non- AGP woredas	5.1
Oromiya	All woredas	2.6
	AGP woredas	1.3
	Non- AGP woredas	2.9
SNNP	All woredas	2.6
	AGP woredas	2.4
	Non- AGP woredas	2.7

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: Household level data on travel times were not collected. Data on the household-level costs of moving products to and from markets were collected, instead (see Tables ES.4-ES.5 below). More disaggregated travel time data will be coleected in the next survey round.

Annex to the Executive Summary

Table ES.1 – Percentage of Kebeles with farmer organizations and the services they provide, by AGP status (related to IO 1.2)

Community level variables	Non-AGP	AGP	Total
Rural savings and credit cooperative in PA	31.2	34.8	32.1
There are restrictions on who can join the cooperatives	66.7	78.2	69.5
Sell/distribute improved seeds or hybrids	19.4	30.2	21.8
Provide agricultural credit	22.9	31.9	25
Supply fertilizer	29.1	32.8	29.9
Village saving and loan association in the PA	16	21.9	17.4
There are restrictions on who can join the cooperatives	55.9	72.7	60.1
Sell/distribute improved seeds or hybrids	10.5	18.1	12.3
Provide agricultural credit	15.4	23.8	17.3
Supply fertilizer	12	19.1	13.7
Producer association in the PA	23.8	16.6	22.1
There are restrictions on who can join the cooperatives	64.8	64.2	64.7
Sell/distribute improved seeds or hybrids	33.3	24	31.2
Provide agricultural credit	7	18.7	9.7
Supply fertilizer	36.7	25.7	34.1

Source: Authors' calculations using data from the AGP Baseline Survey 2011

Table ES.2 – Percentage of households using chemical fertilizer, improved seed and irrigation by AGP Status (related to IO 1.3)

Group	Category	Chemical fertilizer users	Improved seed users	Irrigation
Total	All households	57.5	22.5	4.2
	Female HHHs	48.7	16.7	2.9
	Youth HHHs	57.7	22.1	4.0
AGP	All households	62.2	22.1	7.8
	Female HHHs	52.7	18.0	6.3
	Youth HHHs	62.0	22.5	7.4
Non AGP	All households	62.2	22.6	3.1
	Female HHHs	47.5	16.3	1.9
	Youth HHHs	56.0	22.0	2.9

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: HHHs and HHs stand respectively for 'Household Heads' and 'Households'.

Table ES.3 – Percentage of households using chemical fertilizer, improved seed and irrigation (related to IO 1.3)

Group	Category	Chemical fertilizer users	Improved seed users	Irrigation
Tigray	All households	56.8	18.4	8.5
	Female HHHs	48.0	11.8	7.0
	Youth HHHs	53.0	18.9	8.4
	AGP HHHs	44.0	12.0	7.4
	Female HHHs	35.4	6.0	7.3
	Youth HHHs	40.3	12.0	7.0
	Non-AGP	78.0	29.0	10.4
	Female HHHs	69.0	20.7	6.5
	Youth HHHs	75.2	31.0	10.8
Amhara	All households	59.0	33.8	7.2
	Female HHHs	47.0	25.8	4.3
	Youth HHHs	58.0	33.8	6.7
	AGP HHHs	65.8	45.9	12.3
	Female HHHs	52.2	36.4	8.7
	Youth HHHs	67.1	46.7	11.3
	Non-AGP	56.8	30.0	5.8
	Female HHHs	45.0	22.6	3.0
	Youth HHHs	55.7	30.0	5.3
Oromiya	All households	66.0	21.5	3.4
	Female HHHs	57.0	16.2	2.9
	Youth HHHs	69.0	20.7	3.6
	AGP HHHs	73.6	13.2	8.1
	Female HHHs	65.0	12.5	7.5
	Youth HHHs	75.0	14.0	8.1
	Non-AGP	64.0	24.0	1.9
	Female HHHs	54.5	17.0	1.5
	Youth HHHs	66.7	22.6	2.3
SNNP	All households	41.0	13.1	1.8
	Female HHHs	36.0	9.4	1.1
	Youth HHHs	39.0	13.2	1.4
	AGP HHHs	38.0	15.0	1.2
	Female HHHs	31.0	12.7	0.7
	Youth HHHs	34.7	14.0	0.9
	Non-AGP	41.0	12.6	2.0
	Female HHHs	37.5	8.6	1.2
	Youth HHHs	40.0	12.9	1.5

Source: Authors' calculations using data from the AGP Baseline Survey 2011
Notes: HHHs and HHs stand respectively for 'Household Heads' and 'Households'.

Table ES.4 – Transport Cost (Birr per quintal) to the nearest market in …

Group	Category	**Respondents' village**	**Local market town**
Total	All households	3.26	20.95
	Female HHHs	3.3	17.3
	Youth HHHs	4.63	28.42
AGP	All households	4.3	14.67
	Female HHHs	6.94	8.98
	Youth HHHs	4.79	16.5
Non AGP	All households	2.88	22.95
	Female HHHs	1.98	19.88
	Youth HHHs	4.57	32.06

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: HHHs and HHs stand respectively for 'Household Heads' and 'Households'.

Table ES.5 – Transport Cost per Quintal to the nearest market in …

Group	Category	Respondents' village	Local market town
Tigray	All households	2.81	20.66
	Female HHHs	6.09	17.26
	Youth HHHs	1.24	21.65
	AGP HHHs	1.62	22.22
	Female HHHs	0.41	17.47
	Youth HHHs	1.76	23.9
	Non-AGP	6.67	16.98
	Female HHHs	21.24	16.78
	Youth HHHs	-	14.41
Amhara	All households	1.36	6.93
	Female HHHs	2.84	3.71
	Youth HHHs	0.75	10.17
	AGP HHHs	4.1	17.74
	Female HHHs	9.19	8.41
	Youth HHHs	2.42	21.28
	Non-AGP	-	3.38
	Female HHHs	-	2.15
	Youth HHHs	-	6.39
Oromiya	All households	3.86	18.79
	Female HHHs	1.81	13.16
	Youth HHHs	7.25	30.86
	AGP HHHs	1.12	7.58
	Female HHHs	0.89	3.49
	Youth HHHs	1.63	8.53
	Non-AGP	4.64	22.82
	Female HHHs	2.08	16.62
	Youth HHHs	8.92	38.07
SNNP	All households	3.69	40.91
	Female HHHs	4.75	37.76
	Youth HHHs	4.19	45.15
	AGP HHHs	8.59	30.84
	Female HHHs	13.12	25.74
	Youth HHHs	10.59	32.46
	Non-AGP	2.18	42.68
	Female HHHs	2.24	39.76
	Youth HHHs	2.38	47.32

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: HHHs and HHs stand respectively for 'Household Heads' and 'Households'.

Table ES.6Percentage of EAs with farmer organizations and the services they provide, by AGP status and region

	Tigray			Amhara			Oromiya			SNNP		
	Non AGP	AGP	Total	Non AGP	AGP	Total	Non AGP	AGP	Total	Non AGP	AGP	Total
Rural savings and credit cooperative in PA	86.6	84.7	85.4	16.1	36.5	20.8	41.8	27.0	38.2	26.6	30.9	27.4
There are restrictions on who can join the cooperatives	100.0	97.2	98.3	50.9	74.6	57.6	74.1	83.4	75.8	64.6	64.3	64.6
Sell/distribute improved seeds or hybrids	68.2	57.4	61.4	39.3	39.3	39.3	12.6	30.3	16.4	7.3	7.6	7.3
Provide agricultural credit	69.8	67.1	68.1	50.6	37.2	47.8	13.3	31.2	17.2	6.9	12.2	8.1
Provide fertilizer	76.1	65.1	69.2	42.9	42.1	42.7	24.6	30.3	25.8	19.1	13.6	17.9
Village saving and loan association in the PA	43.6	46.5	45.4	7.0	23.2	10.7	19.8	13.3	18.2	17.5	30.3	19.8
There are restrictions on who can join the cooperatives	61.7	97.3	80.3	45.2	78.2	53.0	68.2	74.0	69.6	45.6	57.3	48.5
Sell/distribute improved seeds or hybrids	23.0	48.8	38.5	16.5	14.0	15.9	9.6	21.4	12.3	3.7	4.2	3.8
Provide agricultural credit	47.2	63.8	57.0	27.7	22.3	26.6	13.7	25.6	16.4	0.0	6.6	1.5
Provide fertilizer	31.1	49.8	42.1	16.5	12.3	15.6	14.1	22.6	16.0	0.0	8.0	1.8
Producer association in the PA	58.1	32.7	42.1	30.8	33.6	31.4	21.9	7.7	18.4	17.8	7.7	15.9
There are restrictions on who can join the cooperatives	79.2	76.6	77.9	68.8	77.8	70.8	60.7	71.4	62.6	64.9	37.7	58.0
Sell/distribute improved seeds or hybrids	54.8	34.4	42.9	34.3	50.4	37.8	32.7	15.7	29.3	31.5	4.1	24.3
Provide agricultural credit	43.8	40.4	41.8	0.0	42.3	9.3	10.0	6.1	9.2	6.3	7.1	6.5
Provide fertilizer	57.9	46.4	51.2	39.1	53.0	42.1	32.7	13.0	28.6	41.9	10.2	33.0

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.7 Distance to the nearest town and type of first important road, by region and AGP status.

Region	Category	Distance to nearest large town (KMs)			First important road made of (%)			
		Mean	Median	SD	Concrete	Stones	Dirt	Others
National	All woredas	13.9	10	12.2	11.0	18.8	55.8	14.4
	AGP woredas	14.4	10	13.7	13.4	21.6	49.0	16.0
	Non-AGP woredas	12.7	10	8.5	6.1	13.3	69.4	11.2
Tigray	All woredas	15.7	14	11.6	16.7	3.3	73.3	6.7
	AGP woredas	16.0	14	13.0	22.0	0.0	70.7	7.3
	Non-AGP woredas	14.9	14	7.9	5.3	10.5	78.9	5.3
Amhara	All woredas	16.6	12	12.3	5.6	22.2	48.6	23.6
	AGP woredas	17.1	12	13.2	8.0	28.0	40.0	24.0
	Non-AGP woredas	15.5	14	10.2	0.0	9.1	68.2	22.7
Oromiya	All woredas	12.6	10	9.7	13.9	26.6	43.0	16.5
	AGP woredas	12.2	10	10.4	13.5	30.8	36.5	19.2
	Non-AGP woredas	13.4	12	8.2	14.8	18.5	55.6	11.1
SNNP	All woredas	11.1	7	14.1	8.6	19.8	61.7	9.9
	AGP woredas	12.7	8	17.1	11.8	23.5	52.9	11.8
	Non-AGP woredas	8.2	7	5.5	3.3	13.3	76.7	6.7

Source: Authors' calculations using data from the AGP Baseline Survey, 2011.

Table ES.8 Accessibility of the first most important road, by region and AGP status.

Region	Category	Accessibility of first important road during rainy season (%)					Accessibility of first important road during dry season (%)				
		Any vehicle	Trucks and buses	Mini-bus	Carts or animals	Only walking	Any vehicle	Trucks and buses	Mini-bus	Carts or animals	Only walking
National	All woredas	30.6	6.2	2.4	13.4	47.4	45.9	7.9	8.9	10.3	27.1
	AGP woredas	34.4	5.7	2.6	13.0	44.3	50.5	6.8	7.8	9.4	25.5
	Non-AGP woredas	23.2	7.1	2.0	14.1	53.5	37.0	10.0	11.0	12.0	30.0
Tigray	All woredas	38.6	10.5	7.0	3.5	40.4	58.6	12.1	17.2	0.0	12.1
	AGP woredas	44.7	5.3	7.9	2.6	39.5	64.1	10.3	12.8	0.0	12.8
	Non-AGP woredas	26.3	21.1	5.3	5.3	42.1	47.4	15.8	26.3	0.0	10.5
Amhara	All woredas	31.1	1.4	1.4	8.1	58.1	51.4	5.4	8.1	6.8	28.4
	AGP woredas	38.0	2.0	2.0	8.0	50.0	60.0	4.0	6.0	4.0	26.0
	Non-AGP woredas	16.7	0.0	0.0	8.3	75.0	33.3	8.3	12.5	12.5	33.3
Oromiya	All woredas	35.0	8.8	0.0	16.3	40.0	38.8	10.0	0.0	18.8	32.5
	AGP woredas	37.7	9.4	0.0	13.2	39.6	43.4	7.5	0.0	17.0	32.1
	Non-AGP woredas	29.6	7.4	0.0	22.2	40.7	29.6	14.8	0.0	22.2	33.3
SNNP	All woredas	20.0	5.0	2.5	22.5	50.0	38.8	5.0	12.5	12.5	31.3
	AGP woredas	19.6	5.9	2.0	25.5	47.1	38.0	6.0	14.0	14.0	28.0
	Non-AGP woredas	20.7	3.4	3.4	17.2	55.2	40.0	3.3	10.0	10.0	36.7

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

ES.9. – Cell phone, and radio access and quality of services, by region and AGPstatus.

Region	Woreda	Access and quality of cell phone cover (%)				Access and quality of radio broadcasts (%)			
		Proportion with access (%)	Excellent or good	Fair	Poor or erratic	Proportion with access (%)	Excellen t or good	Fair	Poor or erratic
National	All woredas	73.0	22.1	37.4	40.5	96.7	62.9	27.9	9.2
	AGP woredas	73.5	19.0	40.8	40.1	96.5	66.3	27.5	6.2
	Non-AGP woredas	72.1	28.0	30.7	41.3	97.1	56.4	28.7	14.9
Tigray	All woredas	69.4	32.6	39.5	27.9	98.4	73.8	23.0	3.3
	AGP woredas	73.8	25.8	45.2	29.0	100.0	73.8	23.8	2.4
	Non-AGP woredas	60.0	50.0	25.0	25.0	95.0	73.7	21.1	5.3
Amhara	All woredas	80.0	25.0	32.8	42.2	97.5	66.7	19.2	14.1
	AGP woredas	73.6	23.1	35.9	41.0	98.1	73.1	17.3	9.6
	Non-AGP woredas	92.6	28.0	28.0	44.0	96.3	53.8	23.1	23.1
Oromiya	All woredas	87.7	11.3	39.4	49.3	96.3	59.0	35.9	5.1
	AGP woredas	83.3	11.1	37.8	51.1	94.4	64.7	33.3	2.0
	Non-AGP woredas	96.3	11.5	42.3	46.2	100.0	48.1	40.7	11.1
SNNP	All woredas	54.3	25.0	38.6	36.4	95.1	54.5	32.5	13.0
	AGP woredas	62.7	18.8	46.9	34.4	94.1	54.2	35.4	10.4
	Non-AGP woredas	40.0	41.7	16.7	41.7	96.7	55.2	27.6	17.2

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.10. Access to markets and services, by region and AGP status

Region	Category	Number of telecenters in PA (%)		Distance to nearest telecenter out of PA (KMs)		Number of daily markets in PA (%)		Distance to nearest daily market out of PA (KMs)		Number of periodic (at least once per week) markets in PA (%)		Distance to nearest periodic market out of PA (KMs)	
		1	2 or more	Mean	SD	1	2 or more	Mean	SD	1	2 or more	Mean	SD
National	All woredas	34.0	4.6	14.7	12.0	13.3	1.0	21.5	37.1	43.2	4.6	11.8	32.2
	AGP woredas	33.2	4.5	14.3	12.0	12.2	1.5	17.8	17.0	45.7	4.5	9.0	8.9
	Non-AGP woredas	35.6	4.8	15.5	12.1	15.5	0.0	29.2	59.9	38.5	4.8	16.8	51.6
Tigray	All woredas	46.8	19.4	15.5	10.4	4.9	3.3	22.5	22.3	38.7	1.6	12.1	9.7
	AGP woredas	42.9	16.7	15.6	11.1	7.1	4.8	22.3	23.5	35.7	0.0	12.0	10.2
	Non-AGP woredas	55.0	25.0	15.3	6.4	0.0	0.0	22.8	20.1	45.0	5.0	12.3	8.7
Amhara	All woredas	36.3	1.3	16.5	13.5	18.8	1.3	21.8	39.3	51.3	6.3	9.8	6.7
	AGP woredas	32.1	1.9	14.3	11.5	15.1	1.9	15.7	13.3	56.6	7.5	8.7	6.0
	Non-AGP woredas	44.4	0.0	21.8	16.8	25.9	0.0	36.8	69.3	40.7	3.7	11.4	7.4
Oromiya	All woredas	27.5	1.3	16.4	12.0	7.7	0.0	14.8	11.3	36.3	2.5	8.7	6.3
	AGP woredas	30.2	1.9	16.0	12.7	3.9	0.0	16.6	11.8	39.6	3.8	7.9	6.7
	Non-AGP woredas	22.2	0.0	17.0	11.0	14.8	0.0	11.0	9.3	29.6	0.0	10.0	5.3
SNNP	All woredas	28.4	0.0	11.3	10.6	19.8	0.0	27.6	57.4	45.7	7.4	17.4	64.4
	AGP woredas	29.4	0.0	11.9	12.1	21.6	0.0	17.5	18.6	49.0	5.9	6.9	11.2
	Non-AGP woredas	26.7	0.0	10.2	7.5	16.7	0.0	45.6	90.9	40.0	10.0	33.4	101.5

Source: Authors' calculations using data from the AGP Baseline Survey, 2011.

Table ES.11. Yield in quintals for major cereals, pulses and oil seeds by AGP status and egion

Group	Category	Statistic	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil Seeds
National	All HHHs	Mean	9.4	14.7	14.6	17.2	11.5	10.9	5.1
		Median	6.7	9.6	10.0	12.0	8.0	6.7	4.0
		SD	9.0	14.8	14.4	17.4	10.4	14.2	5.8
AGP woredas	All HHHs	Mean	9.8	14.0	15.1	16.0	13.0	12.6	7.0
		Median	8.0	10.0	10.7	10.0	9.3	8.0	4.0
		SD	9.1	14.0	14.5	17.0	12.9	14.1	9.0
Non-AGP woredas	All HHHs	Mean	9.2	14.9	14.4	17.6	10.9	10.4	4.4
		Median	6.0	9.5	9.6	12.0	8.0	6.0	3.8
		SD	8.9	15.0	14.3	17.5	9.1	14.2	3.5
Tigray	All Households	Mean	7.7	10.8	11.6	10.5	10.9	9.1	4.6
		Median	6.0	8.0	8.3	6.9	8.0	6.7	3.2
		SD	7.1	8.3	9.4	12.7	10.1	15.0	6.2
	AGP Households	Mean	7.9	11.2	12.5	11.0	11.9	8.4	4.8
		Median	6.0	8.0	10.0	6.7	9.3	6.4	3.2
		SD	6.9	9.2	10.0	13.4	10.8	7.8	6.7
	Non-AGP Households	Mean	7.4	10.3	10.8	9.8	7.5	10.2	3.8
		Median	5.9	8.0	8.0	7.2	6.0	8.0	2.8
		SD	7.4	7.2	8.7	11.5	5.9	21.8	2.8
Amhara	All Households	Mean	12.1	16.8	16.5	24.7	11.6	12.5	6.6
		Median	8.0	8.7	9.3	15.0	9.0	6.0	4.0
		SD	11.0	19.0	18.5	24.4	9.4	18.1	8.3
	AGP Households	Mean	11.2	16.0	21.1	20.7	13.0	13.7	8.5
		Median	8.0	10.7	14.0	15.0	9.6	8.0	4.8
		SD	10.8	15.6	21.1	19.2	13.3	19.0	11.0
	Non-AGP Households	Mean	12.4	17.0	15.9	27.1	11.1	12.4	5.3
		Median	8.4	8.0	8.4	16.0	9.0	6.0	3.2
		SD	11.0	19.5	18.1	26.7	7.8	17.9	5.6
Oromiya	All Households	Mean	8.4	15.9	14.7	17.5	12.2	11.5	4.6
		Median	6.7	12.0	11.2	13.7	8.4	8.0	4.0
		SD	7.1	12.9	11.9	14.6	11.6	11.1	4.1
	AGP Households	Mean	9.8	16.0	15.2	17.2	15.0	14.0	6.8
		Median	8.0	12.0	11.3	11.2	11.2	10.0	4.0
		SD	8.1	14.7	13.2	17.2	14.3	12.8	7.8
	Non-AGP Households	Mean	7.5	15.8	14.4	17.6	11.2	10.4	4.0
		Median	6.0	12.0	11.2	14.0	8.0	8.0	3.8
		SD	6.3	12.3	11.2	13.9	10.4	10.1	2.4
SNNP	All Households	Mean	5.5	7.5	10.5	10.7	9.0	6.9	5.2
		Median	4.0	5.6	8.0	7.5	8.0	4.2	3.8
		SD	5.4	7.2	10.9	11.9	7.0	10.4	3.5
	AGP Households	Mean	4.7	7.8	7.2	7.2	6.2	6.0	3.8
		Median	2.8	5.0	5.0	5.0	5.0	4.0	3.5
		SD	5.3	8.4	6.7	7.4	5.3	8.1	2.2
	Non-AGP Households	Mean	5.6	7.4	11.2	11.5	9.6	7.0	6.1
		Median	4.0	5.6	8.0	8.0	8.0	4.2	6.3
		SD	5.4	6.8	11.5	12.7	7.1	10.7	3.9

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'SD' stands for 'Standard Deviation'.

Table ES.12. Milk yield in litre per cow per day by AGP status and region

Group	Category	Milk yield (litres/cow/day)	
		Mean	SD
National	**All Households**	0.95	0.7
AGP Households	**All Households**	0.93	0.73
Non-AGP Households	**All Households**	0.96	0.69
Tigray	**All Households**	0.94	0.83
	AGP Households	1.02	0.87
	Non-AGP Households	0.79	0.72
Amhara	**All Households**	0.97	0.75
	AGP Households	0.75	0.45
	Non-AGP Households	1.10	0.86
Oromiya	**All Households**	0.90	0.64
	AGP Households	0.94	0.76
	Non-AGP Households	0.89	0.59
SNNP	**All Households**	1.03	0.75
	AGP Households	1.20	1.07
	Non-AGP Households	0.98	0.62

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Extension service

Table ES.13. Percentage of households visited by extension agents in the last 12 months

Group	Category	Percentage of households
National	**All Households**	35.0
AGP woreda	**All Households**	35.0
Non AGP woreda	**All Households**	35.0
Tigray	**All Households**	31.7
	AGP Households	32.9
	Non-AGP Households	29.6
Amhara	**All Households**	32.7
	AGP Households	30.5
	Non-AGP Households	33.4
Oromiya	**All Households**	34.4
	AGP Households	39.5
	Non-AGP Households	32.7
SNNP	**All Households**	39.0
	AGP Households	31.4
	Non-AGP Households	40.8

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.14. Extension service provided for major cereals, pulses and oil seeds on preparation of land

Group	Category	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil Seeds
National	**All Households**	44.2	44.5	47.4	40.8	29.1	41.1	30.2
AGP woreda	**All Households**	43.2	39.2	47.2	41.8	38.6	44.0	37.7
Non AGP woreda	**All Households**	44.6	45.8	47.4	40.4	25.7	40.4	27.4
Tigray	**All Households**	41.4	56.3	58.7	44.4	38.6	55.2	33.8
	AGP Households	45.8	59.8	61.9	42.7	41.9	54.8	34.8
	Non-AGP Households	37.7	53.1	56.2	46.8	27.8	55.6	29.8
Amhara	**All Households**	45.4	55.8	53.2	45.7	22.0	44.9	43.4
	AGP Households	43.9	50.7	54.7	47.5	32.5	48.5	40.5
	Non-AGP Households	45.9	56.7	53.0	44.8	18.9	44.3	45.0
Oromiya	**All Households**	43.0	36.2	40.0	39.2	29.7	39.0	23.4
	AGP Households	42.6	34.2	44.9	35.8	42.8	43.3	35.0
	Non-AGP Households	43.1	36.7	37.6	40.1	25.7	37.5	20.9
SNNP	**All Households**	45.3	45.3	57.0	36.7	38.4	38.5	38.9
	AGP Households	42.5	31.1	44.0	44.3	27.3	37.0	66.1
	Non-AGP Households	45.7	49.6	59.6	34.4	41.0	38.7	28.9

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.15. Extension service provided for major cereals, pulses and oil seeds on methods of planting

Group	Category	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil Seeds
National	**All Households**	44.6	44.4	47.5	42.4	28.9	41.6	30.7
AGP woreda	**All Households**	42.3	37.8	48.0	43.2	39.6	43.6	38.0
Non AGP woreda	**All Households**	45.5	46.1	47.4	42.1	25.1	41.1	28.0
Tigray	**All Households**	41.7	57.4	59.4	47.3	43.0	53.6	40.7
	AGP Households	47.1	62.3	63.7	48.4	47.3	52.5	42.4
	Non-AGP Households	37.1	52.8	55.9	45.8	28.7	55.0	33.4
Amhara	**All Households**	46.5	56.5	52.6	50.1	21.0	45.9	44.4
	AGP Households	44.4	49.1	55.2	49.3	31.9	47.4	40.2
	Non-AGP Households	47.2	57.7	52.2	50.5	17.8	45.6	46.7
Oromiya	**All Households**	43.2	36.0	40.3	39.8	29.3	39.2	22.9
	AGP Households	40.6	31.4	45.2	36.2	43.0	43.3	32.5
	Non-AGP Households	44.6	37.2	37.9	40.8	25.1	37.8	20.9
SNNP	**All Households**	44.3	43.8	58.0	36.3	38.0	38.7	37.8
	AGP Households	41.7	31.5	46.7	45.7	25.4	36.9	62.1
	Non-AGP Households	44.8	47.6	60.2	33.5	41.0	39.1	28.9

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.16. Extension service provided for major cereals, pulses and oil seeds on methods of fertilizer use

Group	Category	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil Seeds
National	**All Households**	45.5	43.6	48.7	41.5	25.5	39.7	28.5
AGP woreda	**All Households**	42.8	39.1	48.1	41.8	37.9	41.8	34.4
Non AGP woreda	**All Households**	46.6	44.7	48.9	41.4	21.0	39.2	26.3
Tigray	**All Households**	48.7	67.0	66.8	47.5	44.6	59.0	36.7
	AGP Households	51.4	76.0	74.1	46.6	45.8	60.0	37.8
	Non-AGP Households	46.3	58.5	61.0	48.7	40.6	57.8	32.0
Amhara	**All Households**	49.2	53.0	55.8	49.6	16.1	43.9	39.5
	AGP Households	45.8	52.1	57.0	48.7	28.6	48.9	35.6
	Non-AGP Households	50.4	53.1	55.6	50.1	12.4	43.2	41.7
Oromiya	**All Households**	43.0	36.5	40.6	38.9	26.8	36.8	22.0
	AGP Households	40.6	30.7	44.2	34.6	42.5	39.4	31.1
	Non-AGP Households	44.3	38.0	38.8	40.0	22.1	35.9	20.0
SNNP	**All Households**	42.9	42.2	56.9	35.0	30.8	37.3	43.5
	AGP Households	40.4	31.4	46.7	43.1	22.3	34.8	46.0
	Non-AGP Households	43.3	45.4	59.0	32.5	32.8	37.8	42.5

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.17. Satisfaction of households with the last visit by extension agents (crop, livestock and natural management experts) -percentage of households

Group	Category	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied	Percentage of households visited by extension agents
National	**All Households**	66.7	32.1	0.8	0.5	27.0
AGP Households	**All Households**	65.3	33.0	0.9	0.9	27.9
Non-AGP Households	**All Households**	67.1	31.8	0.7	0.4	26.7
Tigray	**All Households**	49.0	48.3	1.9	0.8	24.0
	AGP Households	36.9	61.7	0.8	0.6	24.3
	Non-AGP Households	69.9	25.2	3.9	1.1	23.6
Amhara	**All Households**	67.4	31.1	1.4	0.1	23.1
	AGP Households	56.2	40.8	2.4	0.7	23.5
	Non-AGP Households	70.3	28.6	1.1	0.0	22.9
Oromiya	**All Households**	76.2	22.5	1.0	0.4	28.7
	AGP Households	79.6	18.9	0.3	1.2	32.7
	Non-AGP Households	74.9	23.9	1.2	0.0	27.4
SNNP	**All Households**	58.7	40.4	0.1	0.8	28.6
	AGP Households	56.2	42.5	0.7	0.7	24.1
	Non-AGP Households	59.1	40.0	0.8	0.0	29.6

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.18. Satisfaction of households with the last visit by crop expert -percentage of households

Group	Category	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied	Percentage of households visited by crop expert (out of those visited by an agent)
National	**All Households**	64.7	33.7	1.0	0.5	35.3
AGP Households	**All Households**	63.4	34.9	0.6	1.1	33.0
Non-AGP Households	**All Households**	65.1	33.4	1.1	0.4	36.1
Tigray	**All Households**	56.4	40.8	2.4	0.4	23.3
	AGP Households	31.3	67.1	0.7	0.8	20.0
	Non-AGP Households	84.4	11.3	4.3	0.0	29.7
Amhara	**All Households**	65.0	33.0	1.8	0.2	31.7
	AGP Households	53.2	44.7	1.0	1.1	33.7
	Non-AGP Households	68.5	29.5	2.0	-	31.1
Oromiya	**All Households**	75.7	22.5	1.5	0.3	31.1
	AGP Households	78.8	19.4	0.6	1.2	29.5
	Non-AGP Households	74.6	23.6	1.8	-	31.7
SNNP	**All Households**	54.7	44.3	0.1	0.9	47.4
	AGP Households	52.6	46.0	0.5	1.0	49.4
	Non-AGP Households	55.1	44.0	0.9	-	47.0

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.19 - Satisfaction of households with the last visit by livestock expert (including veterinary services) - percentage of households

Group	Category	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied	Percentage of households visited by livestock expert (out of those visited by an agent)
National	**All Households**	74.6	24.3	0.3	0.7	13.3
AGP Households	**All Households**	69.3	28.8	1.0	1.0	15.2
Non-AGP Households	**All Households**	76.7	22.6	0.1	0.7	12.7
Tigray	**All Households**	47.4	49.8	1.4	1.4	29.4
	AGP Households	42.5	56.2	0.7	0.6	31.4
	Non-AGP Households	58.4	35.6	3.0	3.0	25.5
Amhara	**All Households**	74.8	24.3	0.9	-	13.7
	AGP Households	55.8	39.2	5.0	-	11.9
	Non-AGP Households	78.9	21.1	-	-	14.2
Oromiya	**All Households**	81.7	17.5	-	0.7	10.1
	AGP Households	82.6	15.7	-	1.8	14.5
	Non-AGP Households	81.2	18.8	-	0.0	8.2
SNNP	**All Households**	72.7	26.1	-	1.2	17.2
	AGP Households	69.3	30.7	-	-	15.0
	Non-AGP Households	73.3	25.3	-	1.4	17.6

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.20 – Satisfaction of households with the last visit by natural resource management expert -percentage of households

Group	Category	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied	Percentage of households visited by natural resource management expert (out of those visited by an agent)
National	**All Households**	65.2	34.4	0.4	-	7.4
AGP Households	**All Households**	58.6	39.2	2.2	-	5.3
Non-AGP Households	**All Households**	66.6	33.3	0.1	-	8.1
Tigray	**All Households**	32.2	65.2	2.7	-	8.1
	AGP Households	28.9	69.4	1.7	-	8.5
	Non-AGP Households	41.3	53.4	5.3	-	7.4
Amhara	**All Households**	70.4	28.8	0.8	-	8.7
	AGP Households	66.7	28.1	5.2	-	4.4
	Non-AGP Households	71.1	28.9	-	-	9.9
Oromiya	**All Households**	68.8	31.2	-	-	4.8
	AGP Households	72.0	28.0	-	-	4.4
	Non-AGP Households	68.1	31.9	-	-	4.9
SNNP	**All Households**	61.6	38.1	0.4	-	10.9
	AGP Households	48.7	48.0	3.3	-	7.8
	Non-AGP Households	63.2	36.8	-	-	11.4

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.21 – Satisfaction of households with the last visit to FTCs -percentage of households

Group	Category	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied	Percentage of households who visited FTC (Farmer training Centers)
National	**All Households**	63.4	35.9	0.6	0.2	5.7
AGP Households	**All Households**	56.3	42.2	0.9	0.7	6.2
Non-AGP Households	**All Households**	65.6	33.9	0.5	-	5.6
Tigray	**All Households**	46.5	50.6	2.9	-	8.7
	AGP Households	36.2	60.9	3.0	-	6.9
	Non-AGP Households	60.5	36.8	2.8	-	11.9
Amhara	**All Households**	55.1	44.7	-	0.2	4.5
	AGP Households	60.3	38.4	-	1.3	4.1
	Non-AGP Households	54.1	45.9	-	-	4.6
Oromiya	**All Households**	83.0	16.7	-	0.3	4.7
	AGP Households	53.6	45.1	-	1.4	5.5
	Non-AGP Households	93.0	7.0	-	-	4.5
SNNP	**All Households**	54.6	44.4	1.0	-	8.4
	AGP Households	63.5	35.2	-	1.3	10.6
	Non-AGP Households	52.1	47.0	0.9	-	8.0

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.22. Yield in quintals for root crops, chat, enset, and coffee by AGP status and region

Group	Category[2]	Statistic[2]	Root Crops	Chat	Enset	Coffee
National	All HHHs	Mean	46.6	130.6	52.3	12.1
		Median	24.0	4.7	10.0	3.4
		SD	64.5	677.9	203.3	40.4
AGP woredas	All HHHs	Mean	46.4	189.1	34.8	16.8
		Median	20.0	640.0	10.0	3.6
		SD	66.8	1029.6	119.1	49.2
Non-AGP woredas	All HHHs	Mean	46.6	108.2	57.9	11.0
		Median	24.0	400.0	9.3	3.3
		SD	63.9	477.9	223.2	37.9
Tigray	All Households	Mean	39.8	109.0	3.5	0.0
		Median	12.1	9.0	0.5	0.0
		SD	64.9	229.3	7.4	0.0
	AGP Households	Mean	37.3	114.4	2.1	0.0
		Median	12.0	9.0	0.5	0.0
		SD	58.5	233.6	2.6	0.0
	Non-AGP Households	Mean	42.8	0.0	5.2	0.0
		Median	15.0	0.0	0.3	0.0
		SD	71.8	0.0	10.5	0.0
Amhara	All Households	Mean	66.0	23.5	15.9	10.1
		Median	32.0	2.5	3.2	1.5
		SD	86.1	65.1	39.0	10.5
	AGP Households	Mean	68.1	34.3	22.1	10.1
		Median	34.1	2.5	3.2	1.5
		SD	86.8	76.2	49.0	10.5
	Non-AGP Households	Mean	65.3	0.1	6.5	0.0
		Median	32.0	0.1	3.2	0.0
		SD	85.9	0.0	7.5	0.0
Oromiya	All Households	Mean	47.6	173.0	10.4	55.2
		Median	30.0	18.0	2.4	16.0
		SD	62.1	641.2	40.0	120.9
	AGP Households	Mean	51.3	36.5	11.3	47.7
		Median	30.0	7.2	2.7	20.0
		SD	66.6	201.7	33.6	126.5
	Non-AGP Households	Mean	46.8	234.6	10.2	62.8
		Median	30.0	24.0	2.4	16.0
		SD	61.0	752.5	40.9	114.4
SNNP	All Households	Mean	29.1	107.3	13.2	51.9
		Median	17.5	3.2	5.0	8.5
		SD	37.9	706.0	40.8	213.0
	AGP Households	Mean	21.1	317.2	18.6	30.0
		Median	14.0	6.1	5.0	8.3
		SD	28.0	1378.2	55.7	116.0
	Non-AGP Households	Mean	31.4	40.3	11.9	57.4
		Median	20.0	3.2	5.0	8.5
		SD	40.0	181.1	35.9	230.7

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.23. Extension service provided for root crops, chat, enset, and coffee on preparation of land by AGP status and region

Group	Category	Root Crops	Chat	Enset	Coffee
National	**All Households**	35.8	23.9	24.1	26.6
AGP woreda	**All Households**	34.2	14.6	20.6	23.6
Non-AGP woreda	**All Households**	36.2	27.5	25.2	27.3
Tigray	**All Households**	65.7	6.1	-	23.5
	AGP Households	70.7	0.0	-	37.2
	Non-AGP Households	58.0	64.8	-	0.0
Amhara	**All Households**	45.5	12.6	100.0	25.7
	AGP Households	51.1	30.6	100.0	27.1
	Non-AGP Households	44.1	0.0	-	23.9
Oromiya	**All Households**	28.2	19.5	13.4	23.8
	AGP Households	26.3	7.5	16.3	15.4
	Non-AGP Households	28.7	24.7	11.3	24.8
SNNP	**All Households**	39.5	27.4	26.6	29.7
	AGP Households	30.3	20.1	22.8	27.5
	Non-AGP Households	42.7	29.9	27.6	30.2

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.24. Extension service provided for root crops, chat, enset, and coffee on seed planting methods by AGP status and region

Group	Category	Root Crops	Chat	Enset	Coffee
National	**All Households**	36.9	20.1	22.1	23.8
AGP woreda	**All Households**	35.4	14.2	19.8	22.1
Non AGP woreda	**All Households**	37.3	22.5	22.8	24.2
Tigray	**All Households**	68.9	6.1	-	18.4
	AGP Households	76.1	0.0	-	29.2
	Non-AGP Households	58.0	64.8	-	0.0
Amhara	**All Households**	44.8	9.7	100.0	24.5
	AGP Households	51.1	23.5	100.0	25.0
	Non-AGP Households	43.2	0.0	-	23.9
Oromiya	**All Households**	30.0	17.4	12.4	20.8
	AGP Households	29.5	6.8	16.2	14.6
	Non-AGP Households	30.1	22.0	9.5	21.5
SNNP	**All Households**	40.8	22.5	24.3	26.9
	AGP Households	29.5	20.1	21.5	25.9
	Non-AGP Households	44.9	23.2	25.1	27.2

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.25. Extension service provided for root crops, chat, enset, and coffee on methods of fertilizer use by AGP status and region

Group	Category	Root Crops	Chat	Enset	Coffee
National	**All Households**	34.1	21.0	20.1	20.7
AGP woreda	**All Households**	34.7	14.3	17.9	18.7
Non AGP woreda	**All Households**	33.9	23.6	20.8	21.1
Tigray	**All Households**	66.9	9.4	-	23.5
	AGP Households	72.8	3.6	-	37.2
	Non-AGP Households	58.0	64.8	-	0.0
Amhara	**All Households**	41.5	9.7	0.0	23.4
	AGP Households	51.1	23.5	0.0	23.0
	Non-AGP Households	39.2	0.0	-	23.9
Oromiya	**All Households**	28.5	15.4	11.9	17.6
	AGP Households	29.2	6.2	15.2	12.6
	Non-AGP Households	28.3	19.3	9.5	18.3
SNNP	**All Households**	36.2	25.2	22.0	23.6
	AGP Households	28.0	20.8	19.4	21.1
	Non-AGP Households	39.1	26.8	22.7	24.2

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.26. Percentage of communities (EAs) who reported to have had community level public work projects undertaken since 2009 and completed by AGP woreda

	AGP	Non-AGP	Total
New activities on roads	11.11	11.76	11.34
New activities on soil conservation (e.g. terracing)	31.75	21.57	28.18
New activities in tree planting	16.93	12.75	15.46
New activities on well-digging	5.82	7.84	6.53
New activities on clinic construction	5.29	0.00	3.44
New activities on irrigation/water harvesting	7.94	3.92	6.53
New activities on school construction	13.76	5.88	11.00
Other new activities	4.23	2.94	3.78
Maintenance of roads	11.11	11.76	11.34
Maintenance of soil conservation	9.52	13.73	11.00
Maintenance of tree planting/nursery	2.65	3.92	3.09
Maintenance of water sources	1.06	4.90	2.41
Maintenance of clinics	1.06	0.98	1.03
Maintenance of irrigation/water harvesting	2.12	1.96	2.06
Maintenance of schools	10.05	9.08	9.97
Other maintenance	5.82	4.90	5.50

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.27. Percentage of communities (EAs) who reported to have had community level public work projects undertaken since 2009 and completed by region and AGP woreda

	Tigray			Amhara			Oromiya			SNNP		
	AGP	Non-AGP	Total	AGP	Non-AGP	Total	AGP	Non-AGP	Total	AGP	Non-AGP	Total
New activities on roads	16.2	5.2	12.5	11.3	7.4	10.0	6.1	11.5	8.0	12.0	20.0	15.0
New activities on soil conservation	46.0	36.8	42.9	50.9	25.9	42.5	10.2	11.5	10.7	22.0	16.7	20.0
New activities in tree planting	24.3	26.3	25.0	22.6	11.1	18.8	10.2	11.5	10.7	12.0	6.7	10.0
New activities on well-digging	8.1	5.3	7.1	7.6	7.4	7.5	6.1	15.4	9.3	2.0	3.3	2.5
New activities on clinic construction	5.4	0.0	3.6	5.7	0.0	3.8	6.1	0.0	4.0	4.0	0.0	2.5
New activities on irrigation/water harvesting	21.6	0.0	14.3	1.9	7.4	3.8	10.2	0.0	6.7	2.0	6.7	3.8
New activities on school construction	10.8	5.3	8.9	22.6	3.7	16.3	12.2	7.7	10.7	8.0	6.7	7.5
Other new activities	0.0	15.8	5.4	1.9	0.0	1.3	8.2	0.0	2.3	6.0	0.0	3.8
Maintenance of roads	5.4	10.5	7.1	15.1	11.1	13.8	10.2	15.4	12.0	12.0	10.0	11.3
Maintenance of soil conservation	18.9	21.1	19.6	9.4	18.5	12.5	8.2	11.5	9.3	4.0	6.7	5.0
Maintenance of tree planting/nursery	8.1	0.0	5.4	1.9	3.7	2.5	0.0	7.7	2.7	2.0	3.3	2.5
Maintenance of water sources	2.7	5.3	3.6	0.0	3.7	1.3	0.0	7.7	2.7	2.0	3.3	2.5
Maintenance of clinics	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	2.7	0.0	3.3	1.3
Maintenance of irrigation/water harvesting	8.1	5.3	7.1	1.9	0.0	1.3	0.0	3.9	1.3	0.0	0.0	0.0
Maintenance of schools	8.1	5.3	7.1	13.2	3.7	10.0	8.2	19.2	12.0	10.0	10.0	10.0
Other maintenance	2.7	0.0	1.8	11.3	7.1	10.0	6.1	3.9	5.3	2.0	6.7	3.8

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.28. Average and proportion of revenue collected from the sale of livestock products by region and AGP status

Group	Categories	Variables	Cattle	Shoats	Pack Animals	Chicken	Total
National	All Households	Average revenue (in Birr)	1,037	177	64	64	1,344
		Proportion (in %)	77	13	5	5	100
AGP Households	All Households	Average revenue (in Birr)	801	155	49	30	1,044
		Proportion (in %)	77	15	5	3	100
Non-AGP Households	All Households	Average revenue (in Birr)	1,111	184	69	75	1,438
		Proportion (in %)	77	13	5	5	100
Tigray	All Households	Average revenue (in Birr)	688	205	23	31	1,001
		Proportion (in %)	69	21	2	3	100
	AGP Households	Average revenue (in Birr)	728	218	19	27	1,079
		Proportion (in %)	67	20	2	3	100
	Non-AGP Households	Average revenue (in Birr)	621	184	29	36	871
		Proportion (in %)	71	21	3	4	100
Amhara	All Households	Average revenue (in Birr)	742	222	64	25	1,053
		Proportion (in %)	70	21	6	2	100
	AGP Households	Average revenue (in Birr)	751	144	34	32	962
		Proportion (in %)	78	15	4	3	100
	Non-AGP Households	Average revenue (in Birr)	736	263	80	21	1,102
		Proportion (in %)	67	24	7	2	100
Oromiya	All Households	Average revenue (in Birr)	1,356	195	84	122	1,758
		Proportion (in %)	77	11	5	7	100
	AGP Households	Average revenue (in Birr)	951	192	73	33	1,250
		Proportion (in %)	76	15	6	3	100
	Non-AGP Households	Average revenue (in Birr)	1,491	197	87	152	1,927
		Proportion (in %)	77	10	5	8	100
SNNP	All Households	Average revenue (in Birr)	834	89	32	7	963
		Proportion (in %)	87	9	3	1	100
	AGP Households	Average revenue (in Birr)	479	83	12	8	587
		Proportion (in %)	82	14	2	1	100
	Non-AGP Households	Average revenue (in Birr)	953	91	39	7	1,089
		Proportion (in %)	88	8	4	1	100

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.29. Average and proportion of revenue collected from the sale of crops, by region and AGP status

Group	Category	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vegetables	Root Crops	Fruit Crops	Chat	Coffee	Enset	Total
National	**All Households**	264.0	106.0	320.0	246.0	60.0	260.0	283.0	35.0	121.0	14.0	120.0	1309.0	11.0	3469.0
	Proportion (%)	7.6	3.1	9.2	7.1	1.7	7.5	8.1	1.0	3.5	0.4	3.4	37.7	0.3	100.0
AGP woredas	**All Households**	427.0	132.0	404.0	249.0	107.0	284.0	881.0	113.0	137.0	17.0	420.0	1150.0	18.0	4637.0
	Proportion (%)	9.2	2.8	8.7	5.4	2.3	6.1	19.0	2.4	3.0	0.4	9.1	24.8	0.4	100.0
Non-AGP woredas	**All Households**	214.0	98.0	294.0	245.0	45.0	252.0	98.0	11.0	116.0	14.0	27.0	1358.0	9.0	3109.0
	Proportion (%)	6.9	3.2	9.5	7.9	1.5	8.1	3.2	0.4	3.7	0.4	0.9	43.7	0.3	100.0
Tigray	**All Households**	169.9	52.9	61.8	26.0	231.4	42.5	1369.8	17.5	173.6	0.3	6.4	3.0	0.0	2428.2
	Proportion (in %)	7.0	2.2	2.5	1.1	9.5	1.8	56.4	0.7	7.1	0.0	0.3	0.1	0.0	100.0
	AGP Households	139.7	51.3	58.8	32.9	336.9	53.2	2058.1	10.7	255.2	0.4	10.3	4.6	0.0	3212.8
	Proportion (in %)	4.3	1.6	1.8	1.0	10.5	1.7	64.1	0.3	7.9	0.0	0.3	0.1	0.0	100.0
	Non-AGP Households	218.3	55.5	66.5	14.9	62.4	25.4	266.1	28.3	42.6	0.0	0.0	0.5	0.0	1170.1
	Proportion (in %)	18.7	4.7	5.7	1.3	5.3	2.2	22.7	2.4	3.6	0.0	0.0	0.0	0.0	100.0
Amhara	**All Households**	306.2	75.4	135.3	303.3	73.6	338.5	627.9	96.2	69.7	3.1	1.3	74.7	0.0	2807.8
	Proportion (in %)	10.9	2.7	4.8	10.8	2.6	12.1	22.4	3.4	2.5	0.1	0.0	2.7	0.0	100.0
	AGP Households	364.3	157.1	274.7	802.7	57.6	322.2	1726.8	256.1	86.4	8.5	2.6	176.1	0.0	6029.2
	Proportion (in %)	6.0	2.6	4.6	13.3	1.0	5.3	28.6	4.2	1.4	0.1	0.0	2.9	0.0	100.0
	Non-AGP Households	274.9	31.4	60.3	34.2	82.2	347.4	35.9	10.1	60.6	0.2	0.6	20.1	0.0	1072.1
	Proportion (in %)	25.6	2.9	5.6	3.2	7.7	32.4	3.3	0.9	5.7	0.0	0.1	1.9	0.0	100.0
Oromiya	**All Households**	291.0	154.1	565.0	318.6	70.0	265.9	175.6	16.1	201.8	21.4	58.4	1480.8	2.8	3857.6
	Proportion (in %)	7.5	4.0	14.6	8.3	1.8	6.9	4.6	0.4	5.2	0.6	1.5	38.4	0.1	100.0
	AGP Households	627.4	206.6	684.0	161.1	112.9	432.8	181.8	13.8	200.2	23.0	158.5	703.6	11.7	3725.6
	Proportion (in %)	16.8	5.5	18.4	4.3	3.0	11.6	4.9	0.4	5.4	0.6	4.3	18.9	0.3	100.0
	Non-AGP Households	182.3	137.2	526.6	369.5	56.1	212.0	173.6	16.9	202.4	20.9	26.1	1731.9	0.0	3900.3
	Proportion (in %)	4.7	3.5	13.5	9.5	1.4	5.4	4.4	0.4	5.2	0.5	0.7	44.4	0.0	100.0
SNNP	**All Households**	183.4	59.6	110.0	81.7	9.8	190.7	1.1	7.9	27.9	15.4	360.2	2415.5	39.5	3579.2
	Proportion (in %)	5.1	1.7	3.1	2.3	0.3	5.3	0.0	0.2	0.8	0.4	10.1	67.5	1.1	100.0
	AGP Households	71.2	76.1	61.9	153.4	28.0	125.9	4.2	10.8	26.2	12.2	1213.4	4272.7	54.9	6239.0
	Proportion (in %)	1.1	1.2	1.0	2.5	0.4	2.0	0.1	0.2	0.4	0.2	19.4	68.5	0.9	100.0
	Non-AGP Households	222.6	53.8	126.8	56.6	3.4	213.4	0.0	6.9	28.5	16.6	62.0	1766.5	34.1	2649.6
	Proportion (in %)	8.4	2.0	4.8	2.1	0.1	8.1	0.0	0.3	1.1	0.6	2.3	66.7	1.3	100.0

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table ES.30. Average and proportion of revenue collected from the sale of livestock products by region and AGP status

Category	Statistics	Meat	Hides and Skin	Butter or Yoghurt	Milk or Cream	Dung	Eggs	Total
	Average Revenue (in Birr)	10.3	9.6	71.6	24.7	2.5	31.4	150
AGP HHs	**Proportion (in %)**	6.9	6.4	47.7	16.5	1.7	20.9	
	Average Revenue (in Birr)	8.8	5.3	90.2	1.2	1	50.4	157
Non-AGP HHs	**Proportion (in %)**	5.6	3.4	57.5	0.8	0.6	32.1	
	Average Revenue (in Birr)	8.6	4	41.9	8.1	1.9	34.2	98.7
Tigray	**Proportion (in %)**	8.7	4.1	42.4	8.2	1.9	34.6	
	Average Revenue (in Birr)	2.7	9	19.5	6.3	0.4	39.5	77.3
Amhara	**Proportion (in %)**	3.4	11.7	25.2	8.1	0.5	51.1	
	Average Revenue (in Birr)	16.3	7.3	149.2	7.2	2.6	71.9	254.5
Oromiya	**Proportion (in %)**	6.4	2.9	58.6	2.8	1	28.2	
	Average Revenue (in Birr)	3.7	2.1	51.4	6.4	0.2	8.5	72.3
SNNP	**Proportion (in %)**	5.1	2.9	71.1	8.9	0.2	11.7	

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Chapter 1: The AGP Baseline Survey — Methodology and Implementation

1.1. Background

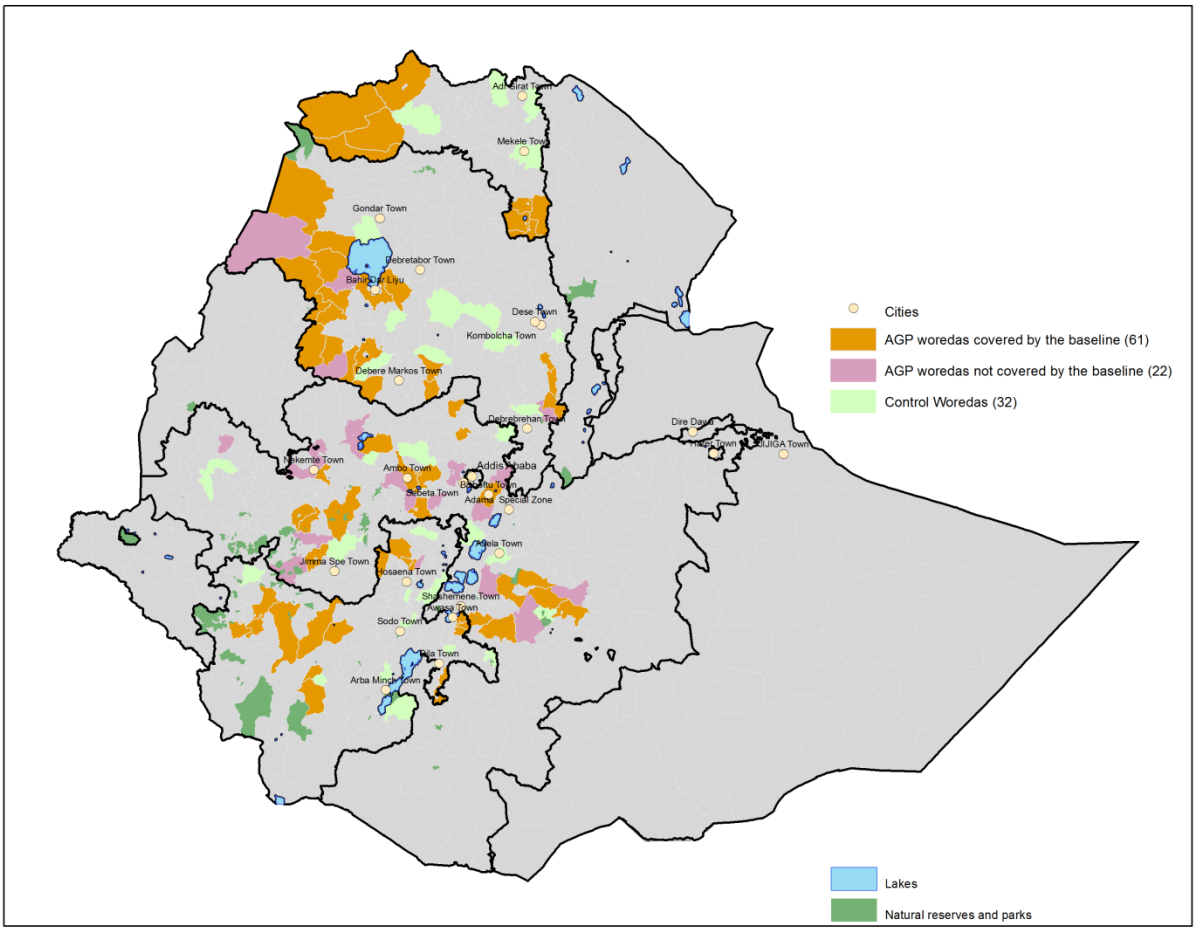
Increased smallholder productivity and value-added in the agricultural sector are core elements of the Ethiopian Government's approach to poverty reduction. The Agricultural Growth Program (AGP) is a component of this broad effort that will commence in 2011.[3] The AGP, as proposed, is a five-year program which has as the primary objective "to increase agricultural productivity and market access for key crop and livestock products in targeted *woredas* with increased participation of women and youth". The AGP will:

- Focus on agricultural productivity growth;
- Target 83 *woredas* in Amhara, Oromiya, SNNP, and Tigray — *woredas* deemed to possess high agricultural growth potential that can be realized with appropriate interventions (see Figure 1.1 for a map and Annex Table A.1.1 for the list of AGP woredas)[4];
- Identify key commodities based on a variety of considerations — from current share in production and potential marketability to possibilities for spatial spill-over effects; and
- Emphasize greater participation of women and young people.

The AGP has two main components. *Agricultural Production and Commercialization* constitutes the first component and its objectives are: "to strengthen the capacity of farmer organizations and their service providers to scale up best practices and adopt improved technologies in production and processing, and to strengthen marketing and processing of selected commodities through engagement with private sector stakeholders". The second component, *Small-scale Rural Infrastructure Development and Management,* will "support the construction, rehabilitation and/or improvement, and management of small-scale rural infrastructure to improve productivity, and to further develop and increase the efficiency of key value chains through improved access to markets."

[3] The details regarding the AGP are drawn from MoARD (June, 2010) and World Bank (September, 2010).
[4] The number of woredas covered by the AGP has more recently been expanded to 96.

Figure 1.1. AGP woredas



To support these activities, a wide set of M&E activities (Subcomponent 3.3.2) are envisaged. These will: (a) generate information on progress, processes, and performance; (b) analyse and aggregate data generated at various levels to track progress and monitor process quality, program impacts, and sustainability; and (c) document and disseminate key lessons to users and stakeholders. One element of this work is the evaluation of outcomes and impacts (see section 3.3.2.3 of the PIM) so as to provide evidence on progress towards meeting the key outcome indicators for the AGP:

- The percentage increase in agricultural yields of participating households; and
- The percentage increase in total marketed value of targeted crops and livestock products per participating household.

1.2. Objectives of the Impact Evaluation of the AGP

IFPRI's Ethiopia Strategy Support Program (ESSP) will support the AGP through the development and implementation of an impact evaluation strategy.[5] The discussion below outlines the proposed evaluation strategy. We begin by outlining general issues associated with *any* impact evaluation. We discuss specific features of the AGP that affect how it can be evaluated and, based on these, propose a general approach for the impact evaluation of the AGP.

1.3. Methodology — Impact Evaluation

General Design Issues

The purpose of an impact evaluation is to compare outcomes for beneficiaries of a program to what those outcomes would have been had they not received the program. The difference between the observed outcomes for beneficiaries and these *counterfactual* outcomes represent the causal impact of the program. The fundamental challenge of an impact evaluation is that it is not possible to observe program beneficiaries in the absence of the program; the *counterfactual* outcomes for beneficiaries are unknown. All evaluation strategies are designed to find a method for constructing a proxy for these counterfactual outcomes. Most evaluations measure counterfactual outcomes for beneficiaries by constructing a comparison group of similar households from among non-beneficiaries. Collecting data on this comparison group makes it possible to observe changes in outcomes without the program and to control for some other factors that affect the outcome, which reduces bias in the impact estimates.

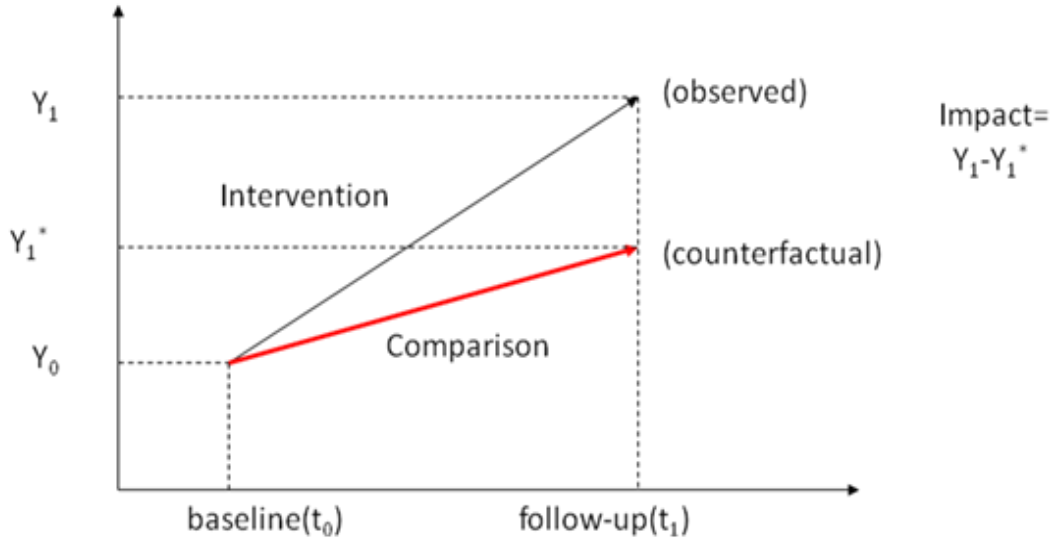
Figure 1.2 shows how information on a comparison group can be used to measure program impact. In the figure, the outcome variable (say crop yields) is represented on the Y axis and time is represented on the X axis. A household survey is conducted to measure yields in two periods, the baseline at t_0 and the follow-up at t_1. In the figure, at baseline the average outcome for both the households benefiting from the intervention and those in the comparison group is at the level of Y_0. After the program, at t_1, the intervention group has yields of level Y_1, while the comparison group has an outcome level of Y_1^*. The impact of the program is measured

[5] "The indicators in the Results Framework will ... [guide] the design [of] the baseline and impact evaluation questions and sampling as the programs outcomes will be measured against these indicators. In addition to the baseline two impact evaluations are planned: a mid-term impact evaluation in FY3 and a final impact evaluation in FY5. The baseline is planned before the project launch. The data collection for the baseline, mid-term impact evaluation and final impact evaluation will be conducted by the Central Statistical Agency (CSA). The Ethiopia Strategy Support Program Phase II will complement the work of CSA. In particular, ESSP would develop the survey instrument ... and the sampling process, as well as to analyze the data and write the impact evaluation reports." (PIM, p. 96).

as $Y_1 - Y_1^*$. If a comparison group had not been included, the impact might have been misrepresented (and overstated) as the observed change in the outcome for the beneficiary group, $Y_1 - Y_0$.

In constructing a comparison group for the evaluation, it is important to ensure that the comparison group is as similar as possible to the program beneficiaries before the start of the program. To understand why, consider estimating the impact of the AGP on crop yields as the difference in average crop yields between beneficiaries and a random sample of non-beneficiaries. The problem with this approach is that non-beneficiaries are different from program beneficiaries in ways that make them an ineffective comparison group. For example, suppose that AGP participants have higher levels of schooling, greater knowledge of good farming practices or are more entrepreneurial than non-participants, and they have demonstrated their interest by participating in the program (this latter factor is sometimes referred to as self-selection bias). If the evaluation does not control for these pre-program differences, impact estimates will be biased. Put it another way, a simple comparison of AGP participants and non-participants cannot distinguish between changes in crop yields brought about by the AGP from those that result from the pre-existing differences in participants and non-participants.

Figure 1.2. Measuring impact from outcomes from beneficiary and comparison groups



There are three ways by which a comparison group can be constructed: randomization, regression discontinuity design (RDD), and matching. Randomization is widely considered to be one of the most powerful approaches to construct a comparison group for an evaluation. The method involves randomly assigning the program among comparably eligible communities or

households. Those that are randomly selected out of the program form a *control group*, while those selected for the program are the *treatment group*. RDD is appropriate when there is a strict cut-off applied that determines program eligibility. Individuals (or households) either side of this cut-off are compared on the assumption that those ineligible (for example, households just above a threshold value used as the cut-off) are virtually identical those that are eligible (for example, households just below the threshold value used as the cut-off). Matching involves the statistical construction of a comparison group of, say households that are sufficiently similar to the treatment group before the program that they serve as a good indication of what the counterfactual outcomes would have been for the treatment group. One popular approach is to match program beneficiaries to a sub-sample of similar non-beneficiaries from the same or neighbouring communities using a matching method such as propensity score matching (PSM), nearest neighbour matching, or propensity weighted regression. Matching methods choose communities or households as a comparison group based on their similarity in observable variables correlated with the probability of being in the program and with the outcome. All matching methods measure program impact as the difference between average outcomes for treated households and a weighted average of outcomes for non-beneficiary households where the weights are a function of observed variables.[6]

Aspects of the AGP Relevant to the Design of an Impact Evaluation Strategy

There are five aspects of the AGP that have a direct bearing on our choice of impact evaluation strategy: purposive *woreda* selection; the demand driven nature of the AGP; household self-selection into AGP activities; the presence of multiple interventions; and spill-over effects. We discuss these, and their implications for evaluation, in turn.

Purposive Woreda Selection: *Woredas* eligible for the AGP are those where existing location factors are conducive for agricultural growth. Further, clustering of AGP *woredas* will assist the program in making significant impact within the targeted areas. The criteria for selection of AGP *woredas* include:

- Access to markets (access to cities of 50,000 population or over in less than 5 hours);
- Natural resource endowments;
- Suitable rainfall and soil for crop and fodder production;
- Potential for development of small-scale irrigation facilities;

[6] The difference between alternative matching methods centres on various methods for constructing the weights for measuring impact.

- Institutional plurality of service providers, including good basis and growth of viable cooperatives and farmer groups; and existing partnership engagements with private sector; and
- Willingness and commitment to participate.

Purposive woreda selection means that an evaluation design based on randomizing access to the AGP at the woreda level is infeasible. It also implies that an RDD design at the *woreda* or even the enumeration area (EA) level is infeasible given that there is not a single, strict metric that determines eligibility.

Demand Driven AGP and Household Self Selection: The AGP is intended to be demand-driven. Households will choose what activities they will undertake and the extent of their participation. As stated in the PIM:

> Bottom-up planning process will be practiced to give greater power to kebele- and woreda-level development initiatives with particular attention to ensuring equal and active participation of both women and men. Individual activities would be largely chosen by farmers, communities and organizations as well as business private sector at a grassroots level. Thus, local male and female farmers, youth, women and private business enterprises are the owners of the program, and will actively participate in problem identification, planning, implementation and monitoring and evaluation of the activities. (PIM, p. 9)

The demand driven, self-selected nature of the AGP means that at the household level, both randomized and RDD designs are infeasible. Further, particular attention must be paid in identifying those locality, household, and individual characteristics that affect the decision to participate in an AGP activity.

Multiple Interventions: Participants in the AGP may benefit from a single intervention, from multiple interventions, and from interventions with differing degrees of intensity. This needs to be taken into account in the evaluation design and implementation.

Spill-over Effects: The AGP will benefit both program participants and non-participants. For example, even if a household chooses not to actively participate in any AGP activities, it may benefit from AGP activities such as the upgrading or construction of new feeder roads or improved market centres. Consider a *woreda* where, as part of the AGP, an improved feeder road is constructed and a package of improved seeds, fertilizers, and technical advice is provided to households who have formed farmers groups. Comparing changes in outcome indicators

between households in these farmers groups and those households who are not members, will underestimate the impact of the AGP for several reasons: all households, not just those in the farmers groups, may benefit from the construction of feeder roads; knowledge gained by members of farmers groups may be shared with non-members; and producer prices may rise if higher output increases the number of traders buying in this locality.

The Impact Evaluation Strategy

The following impact evaluation strategy is proposed:

We will use double difference and matching methods to assess impact employing (as envisaged in the PIM) a baseline survey fielded before the start of the AGP and follow-up surveys (also envisaged in the PIM) to track both program implementation and estimate impact over time. We propose these for three reasons: (a) they can be used to assess the impact of single or multiple interventions; (b) they can estimate the impact of intensity of participation, not just whether a household participates; and (c) other methods, such as randomization and RDD, are infeasible. More specifically, matching estimates are improved by measuring outcomes for treatment and comparison groups before and after the program begins. This makes it possible to construct "difference-in-differences" (DID) estimates of program impact, defined as the average change in the outcome in the treatment group, T, minus the average change in the outcome in the comparison group, C. Mathematically, this is expressed as,

$$\Delta_{DID}^{ATT} = \left(y_1^T - y_0^T\right) - \left(y_1^C - y_0^C\right).$$

The main strength of DID estimates of program impact is that they remove the effect of any unobserved variables that represent persistent (time-invariant) differences between the treatment and comparison group. This helps to control for the fixed component of various contextual differences between treatment and comparison groups, including depth of markets, agro-climatic conditions, and any persistent differences in infrastructure development. As a result, DID estimates can lead to a substantial reduction in selection bias of estimated program impact. As envisaged in existing AGP documentation, DID estimates will be feasible given the intention to field baseline and two follow-up surveys.

We will pay careful attention to characteristics that affect selection and intensity of participation. This provides useful programmatic information (What are the characteristics of those who take part and those who do not? What does this imply in terms of program outreach

and the distribution of benefits within participating *woredas*?). It is also necessary for the implementation of matching methods.

At the household and EA level (kebele level, to be precise), we will collect "bottom-up" data on program implementation. This provides useful programmatic information as well as informing our definition of "participation" in the AGP. We will also ensure that the baseline and follow-up surveys are implemented in both AGP and non-AGP woredas so as to collect information that allows us to examine spill-over effects.

1.4. Methodology — Sample Design

The first step in implementing this evaluation strategy is the collection and analysis of baseline data. The nature and number of indicators to track as well as the coverage and level of disaggregation have to be decided

Disaggregation

A key element of the evaluation design concerns the level or levels of disaggregation at which AGP's impact will be assessed. The AGP-PIM and AGP-PAD contain broad expressions of preference regarding this issue. According to these documents, the two PDO indicators noted above are to be further qualified with the following:

- The indicators "will be monitored for the average household as well as separately for female- and youth-headed households" (World Bank (September, 2010), p. 46).
- "The impact evaluation study will disaggregate the indicators for the key agricultural commodities by region." (World Bank (September, 2010), p. 46)
- "An impact evaluation will be conducted that will assess the increase achieved by the end of implementation relative to the baseline in the area selected for intervention and relative to areas without the intervention." (World Bank (September, 2010), p. 8)

Thus, for example, a literal interpretation suggests that crop- and region-specific indicators are to be monitored for classes of household-types (by gender and age of household heads) in program and non-program woredas. Although appealing at face value, such an evaluation will demand, among others, a rather large sample and an extensive data collection effort. It is thus necessary to consider the extent of spatial and socio-economic disaggregation involved in the impact assessment in light of survey and sampling requirements it entails.

As always, the design of the baseline survey reflects a compromise between coverage and cost. To assist the AGP-TC in making a decision, the IFPRI team highlighted the challenges of conducting a baseline and, subsequently, impact surveys to exhaustively and rigorously track the indictors listed in the AGP-PIM and AGP-PAD. It also presented alternative scenarios matching coverage and levels of disaggregation with cost. The AGP-TC decided to have a yield-focused region-disaggregated baseline.

Sample Size Calculations

The first task in sample design is estimating the sample size needed for the baseline survey. In brief, this involves the following: determine the appropriate level of statistical significance (the sample has to be sufficiently large to minimize the chance of detecting an effect that does not exist), and statistical power (the sample has to be sufficiently large to minimize the chance of not detecting an effect that does exist). Additional determinants of sample size are variability of project outcome indicators; the size of the design effect; the extent of program take up; assumed response and attrition rates; and minimum detectable effect size.

The survey team, based on the decision of the AGP-TC noted above and in consultation with the CSA, has determined sample size on the basis of the following:

- Yield (primarily crop yield) measured from survey data is the primary outcome indicator;
- The desired minimum detectable size effect is equivalent to 20 percent of (or 0.2) standard deviation crop yield growth greater than that achieved in comparable but non-AGP woredas;[7]
- The target level of significance is 5% (two-tailed) and that of power is 80%;
- Ninety percent of the households asked will agree to an interview (or the response rate is 90%);
- The average uptake rate of 75% — i.e., on average, 75% of households who are offered benefits via AGP will accept the offer. This leads to a variance in take-up rates of 0.1875;
- The sample is divided in to two-third treated (or AGP woredas) and one-third control (or non-AGP woredas);
- The woreda being the cluster being targeted, it is proposed to sample 78 households per woreda, with 26 households per enumeration area (EA)

[7] Calculations using CSA's Ethiopian Agricultural Sample Survey data for 2009/10 show that the standard deviation of cereal yields is around 8.8 quintals such that a yield increase equivalent to 30 percent this is the same as a 15 percent growth in mean yield over the project period. Note that between 2007/08 and 2009/10 cereal yields grew at an average annual growth of 4 percent, which, if maintained for five years, will produce a total yield growth of 22 percent.

- With intra-cluster correlation of 0.3, woreda-level clustering, and 78 households sampled from each woreda, the design effect is 23.4 — i.e., the complex sampling design requires 23.2 times as large a sample as that required by a simple random sampling design.

The above conditions combined lead to a sample size of 7930 households spread over 93 woredas and 305 EAs (see Table 1.1 below).

The next step was to define the sampling frame out of which the comparison group of woredas for the purpose of the study can be selected. Since the AGP focuses on woredas with relatively high agricultural potential, it was agreed to exclude woredas covered by the Productive Safety Net Programme (PSNP). Accordingly, comparison woredas were selected from among those in the four regions and are not covered by AGP and PSNP. We refer to this group as non-AGP woredas or the non-AGP sample as appropriate.

Actual data collection comprised 61 AGP woredas and 32 non-AGP/non-PSNP woredas. This outcome was due to one non-AGP woreda being mistakenly identified as an AGP woreda during sampling. Consequently, 200 of the EAs were in AGP woredas while 105 were in non-AGP woredas. Although households in all 305 EAs were surveyed, the kebele level (or community) survey was completed in 304. Remarkably, 7928 households were actually covered by the baseline.

Table 1.1. Sample size and distribution

Region	Sample size	Number of Households per EA	Number of EAs – Total	Number of EAs per woreda	Number of woredas	Number of Treatment woredas	Number of Control woredas
Tigray	1612	26	62	5	12	8	4
Amhara	2106	26	81	3	27	17	10
Oromiya	2106	26	81	3	27	18	9
SNNP	2106	26	81	3	27	18	9
Country	**7930**		**305**		**93**	**61**	**32**

Source: Authors' calculations.
Notes: EA stands for Enumeration Area. Two woredas in Tigray have 6 EAs each.

The composition of the sample with each EA reflects the emphasis given to female-headed and youth-headed households. In order to do so, the EA level sample is divided into female and male headed households and each group further divided into youth headed and mature headed households. Thus the EA sample is divided into a total of 4 age-gender groups. The share of each in the sample is determined by the corresponding shares reported by CSA's Population Census of 2007. Census 2007 data show the distribution of household heads by age and gender reported in columns 2-3 of Table 1.2. Columns 4-5 of the same table report the composition of the sample households.

Table 1.2. Household composition of EA sample

	Share in the population of rural household heads – Census 2007 (%)		Share in the AGP baseline sample of rural household heads – Census 2007 (%)		Implied post-stratification weights	
	Male	**Female**	**Male**	**Female**	**Male**	**Female**
Young (15-34 years of age)	29.6 (8)	5.4 (1)	30.8 (8)	7.7 (2)	0.961	0.701
Mature (35 years of age or older)	48.9 (12)	16.1 (5)	38.5 (10)	23.1 (6)	1.270	0.697

Source: Authors' calculation using CSA data.
Note: The numbers in brackets are implied (columns 2-3) and actual (columns 4-5) number of sample households in an EA (with the total being a predetermined 26).

Thus the AGP baseline slightly oversamples households headed by both young and mature females relative to their share implied by Census 2007. In contrast, mature male headed households are slightly under-sampled. In this regard, the baseline adopted the 15-34 years of age as the relevant bracket in identifying young household heads. Note that the official definition of youth in Ethiopia is from 13 to 34 years of age. However, Census 2007 does not report any heads younger than 15 — thus the cut-off for the baseline.

Methodology — Household and Community Questionnaires

Two questionnaires were administered during the AGP baseline. Both were specifically designed for the baseline in consultation with CSA and relevant stakeholders. The structure of these questionnaires is outlined below:

Household questionnaire

Module	Content
0	General information about the household location; tracking information for follow-up surveys
1	Basic household characteristics
2	Land characteristics and use Crop production Input use in crop production
3	Crop output utilization and marketing
4	Agricultural extension, technology, and information networks
5	Livestock assets, production, and use
6	Household assets
7	Income apart from own agricultural activities and credit
8	Consumption: Non-food expenditures, food consumption, food availability, access, and coping strategies
9	Shocks and poverty perceptions

Community questionnaire

Module	Content
0	Site identification
1	Location and access
2	Household assets
3	Services (general)
4	Production and marketing
5	Technology adoption
6	Migration
7	Local wages
8	Food prices in the last year
9	Current food prices

The design of the questionnaires was guided by the AGP's program objectives and indicators thereof. Table 1.3 reports on this link.

Table 1.3. AGP program indictors and questionnaire sections

Development objective	PDO indicators	Questionnaire module/section
Agricultural productivity and market access increased for key crop and livestock products in targeted woredas, with increased participation of women and youth.	Percentage increase in agricultural yield of participating households (index for basket crops and livestock products).	Module 2: Section 2 Module 5: Sections 1-2
	Percentage increase in total real value of marketed agricultural (including livestock) products per participating household.	Module 3: Section 2 Module 5: Section 3
Sub-component 1.1: Institutional strengthening and development Farmers have improved access to and quality of services through support from key public institutions and private organizations (groups).	Percentage of farmers satisfied with quality of extension services provided (disaggregated by service providers, type of service/technology, crop, and livestock). Share of households that are members of functioning farmer organizations (disaggregated by group type).	Module 4
Sub-component 1.2: Scaling up best practices Sub-projects for improved productivity, value addition, and marketing realized and sustainably managed.	Number of farm households with innovative best practices (improved/new techniques and technologies). Number of sub-projects fully operational and sustainably managed 2 years after initial investments (disaggregated by type of investments).	Module 4
Sub-component 1.3: Market and agribusiness development Key selected value chains strengthened.	Percentage real sales value increase of the key selected value chains commodities supported at the end of the value chain.	Community questionnaire: Section 8
Sub-component 2.1: Small-scale agricultural water development and management. Demand-driven infrastructure investments for improved agricultural productivity realized and sustainably managed.	Number of farmers benefiting from the irrigation investments (disaggregated by type of investments). Percentage increase in area under irrigation. Percentage increase in areas treated under sustainable land management.	Module 2 : Section 7
Sub-component 2.2: Small-scale market infrastructure development and management Demand-driven infrastructure investments for improved access to market realized and sustainably managed.	Percentage decrease in time for farmers to travel to market centre. Percentage of users satisfied with the quality of market centres.	Community questionnaire

Source: MoARD (June, 2010)

1.5. Data Collection

In line with the PIM, the CSA conducted the preparation and implementation of the household and community surveys and the entry of data once collection was completed. IFPRI provided support to CSA as it conducted these activities. Specifically, IFPRI staff: (a) assisted in the training of CSA staff; (b) jointly developed enumerator manuals; (c) assisted with EA and household selection; (d) provided technical support during survey implementation; (e) gave technical advice in the development of the data entry programs. The same approach that IFPRI and CSA have used in the fielding of household and community surveys for the evaluation of the Productive Safety Net Programme was followed. Throughout all aspects of survey implementation, managerial authority rested with CSA. IFPRI's role is to provide technical support and capacity building.

During May-June, 2011, the CSA, in collaboration with IFPRI, completed the design and implementation of the survey methodology (including sampling strategy and sample selection), preparation of questionnaires and manuals, selection and training of survey enumerators, and delineation of EA and household listing. The actual data collection occurred during July 3-22, 2011.

Although data collection was completed as planned, date entry took much longer than initially anticipated. The CSA planned to provide cleaned and processed raw data to MoA by November 13, 2011. Unfortunately, the second half of 2011 and the first couple of months of 2012 turned out to be a very busy time for CSA with a number of periodic large surveys (HICE, DHS) happening in addition to its annual ones during the period. As a consequence, the entry and first-stage cleaning of the AGP baseline data could only be completed in March 2012. This led to a considerable pressure to produce the baseline report in the time frame initially planned.

A Note on Sample Weights

Three steps were involved in the selection of households for the AGP baseline. First, the 61 woredas were randomly selected from among the 83 AGP woredas. Similarly, 32 woredas were randomly selected from among non-PSNP and non-AGP woredas in the four regions within which AGP operates (Amhara, Oromiya, SNNP, and Tigray). At the second stage, 3 EAs where randomly chosen from among EAs in each woreda. Tigray is the exception to this rule because, though the same number of households is demanded by the desired level of precision and power, there are fewer woredas to include. Thus, 5 EAs each from ten woredas and 6 EAs each from two woredas were selected in Tigray. The final step is the selection of 26 households from within each EA. This is done based on a fresh listing of households residing within each EA and

selecting households randomly until the desired number and composition of households is obtained.

Each household included in the AGP baseline sample represents a certain number of households reflecting the selection probability associated with it. This number is its sample weight. All descriptive statistics in this report are weighted by these sample weights.

Chapter 2: Characteristics of Households

This chapter adds to the last section of Chapter 1 in which we provided general features of the study woredas. This section describes households in the study area in terms of their members' (including heads) age, marital status, and occupation. Households are also described in terms of physical assets and livestock they own as well as the type of houses they reside in.

2.1. Demographic Characteristics

As noted above, the design of the AGP baseline survey allows the generation of statistics that are representative of not only the AGP woredas but also the non-PSNP rural woredas of the four regions. According to this survey, an estimated 9.4 million rural households resided in these woredas during 2011. In terms of coverage by AGP, of the total, 22.9 percent resided in woredas planned to benefit from the AGP while the remaining 77.1 reside in non-AGP, non-PSNP woredas. This chapter provides an overview of the demographic structure of these households.

The average age of a household head is 43 years with standard deviation of 15.6 years and a median of 40 years. The age of the household head extends from 15 to 98 years old. When disaggregated by gender, male headed households are younger at 41 years relative to females at 47.5 years (Table 2.1). The median age is relatively lower for male headed households, 36 years, relative to female headed households, 46 years. The gap in the median age between male and female headed households is even higher. As one would expect, households with mature headed households have a higher mean, 51.9 years, than that of younger heads, only 28 years. Regarding AGP status, on average household heads in non-AGP woredas are 0.2 years older than those in AGP woredas which is almost equal in both woreda categories. The remaining statistics for categories by AGP status also have a similar pattern as the national estimates.

Table 2.1. Descriptive statistics on household head's age by household categories and AGP status

Group	Category	Statistics				
		Mean	SD	Median	Maximum	Minimum
National	**All HHS**	43.0	15.6	40	98	15
	Female HHHs	47.5	15.6	46	97	15
	Male HHHs	41.1	15.2	36	98	15
	Mature HHHs	51.9	13.0	50	98	35
	Youth HHHs	28.3	4.0	29	34	15
AGP woredas	**All HHS**	42.9	15.3	40	98	15
	Female HHHs	48.0	15.3	47	97	18
	Male HHHs	40.7	14.8	36	98	15
	Mature HHHs	51.3	13.0	49	98	35
	Youth HHHs	28.3	3.9	29	34	15
Non-AGP woredas	**All HHS**	43.1	15.7	40	98	15
	Female HHHs	47.3	15.7	46	86	15
	Male HHHs	41.2	15.3	36	98	16
	Mature HHHs	52.1	13.0	50	98	35
	Youth HHHs	28.3	4.1	28	34	15

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: HHHs and HHs stand respectively for 'Household Heads' and 'Households'. SD stands for 'Standard Deviation'

When we look at the marital status of the household heads, about 68.5 percent of the household heads are married, 15.5 percent widowed, and 5.4 percent divorced (Table 2.2). There is a wide variation in marital status across gender. Out of the 6.6 million male heads of households 86 percent are married to a single spouse and 8.6 percent are married to two or more. In contrast, large proportions of female household heads are widowed (48 percent) or divorced (about 15 percent). These proportions conform to the tradition in Ethiopia whereby females become household heads when male heads are deceased or the couple is separated. The proportion of household heads across the different marital status varies little among AGP and non-AGP woredas. A similar pattern is observed to that of the national estimates (for details see also table 2.2).

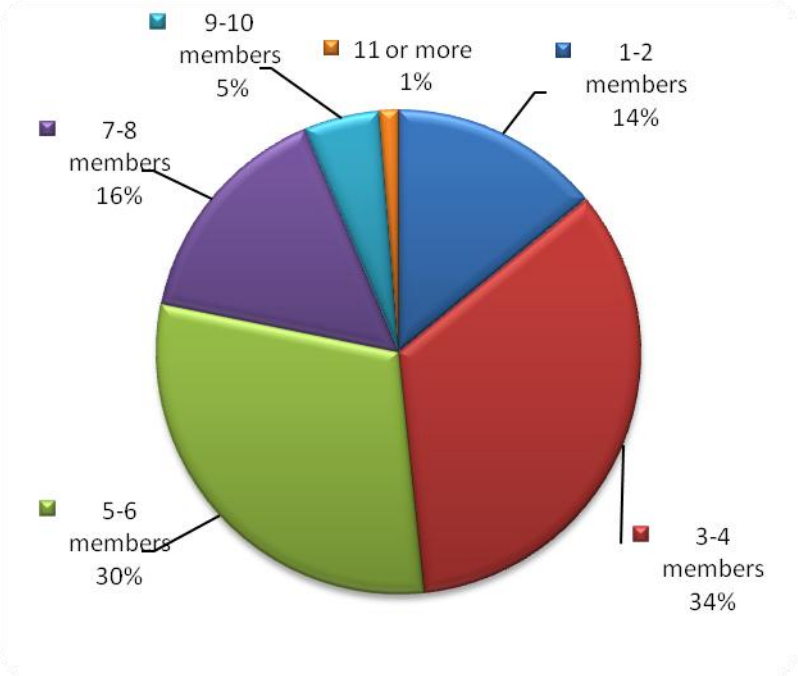
Table 2.2. Proportion of household head marital status by household categories and AGP status

Group	Category	Married, single spouse	Single	Divorced	Widowed	Separated	Married, more than one spouse
National	All HHS	68.5	2.4	5.4	15.5	1.5	6.7
	Female HHHs	28.6	2.2	14.7	48.3	4.0	2.2
	Male HHHs	85.8	2.4	1.4	1.4	0.4	8.6
	Mature HHHs	60.3	0.4	6.1	22.7	1.3	9.2
	Youth HHHs	82.4	5.6	4.3	3.5	1.7	2.5
AGP woredas	All HHS	67.2	2.2	6.7	16.4	1.2	6.4
	Female HHHs	24.2	1.4	18.3	50.7	3.2	2.2
	Male HHHs	85.9	2.5	1.7	1.4	0.3	8.2
	Mature HHHs	59.5	0.5	7.2	23.6	1.3	8.0
	Youth HHHs	80.6	5.2	5.8	3.8	1.1	3.5
Non-AGP woredas	All HHS	69.0	2.4	5.0	15.3	1.5	6.8
	Female HHHs	30.1	2.4	13.5	47.5	4.2	2.2
	Male HHHs	85.7	2.4	1.3	1.4	0.4	8.8
	Mature HHHs	60.5	0.4	5.7	22.4	1.3	9.5
	Youth HHHs	82.9	5.7	3.8	3.5	1.9	2.3

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: HHHs and HHs stand respectively for 'Household Heads' and 'Households'.

With regards to the distribution of household size, there were 45.5 million household members in the 9.4 million households surveyed, which is an average household size of about 4.9 persons (Table 2.3). About 34 percent of the households have 3-4 members followed by 30 percent of the households with 5-6 members (Figure 2.1). With 5.3 members, male headed households are significantly larger than those with female heads that average 3.7 persons. The fact that 63 percent of female household heads are either widowed or divorced relative to the 95 percent male heads who are married may partly explain this difference. The largest 2 categories of 3-4 and 5-6 members account for about 64 percent of the male headed households while households with 1-2 and 3-4 members account for 71 percent of female headed households.

Figure 2.1. Distribution of household size



Source: Authors' calculations using AGP baseline survey data.

As can be expected households with relatively younger heads have smaller sizes, averaging 4.3 members relative to the 5.2 members in the households with mature heads. Households with 3-4 and 5-6 members dominate the youth categories at 76 percent, as well as the mature categories at 57 percent. Although the difference is little, non-AGP woredas have larger household sizes averaging 4.9 members relative to the 4.7 in AGP woredas. The difference is also statistically significant. The distribution of household sizes is similar across AGP and non-AGP woredas. However, there are differences in the proportions across mature and youth headed households.

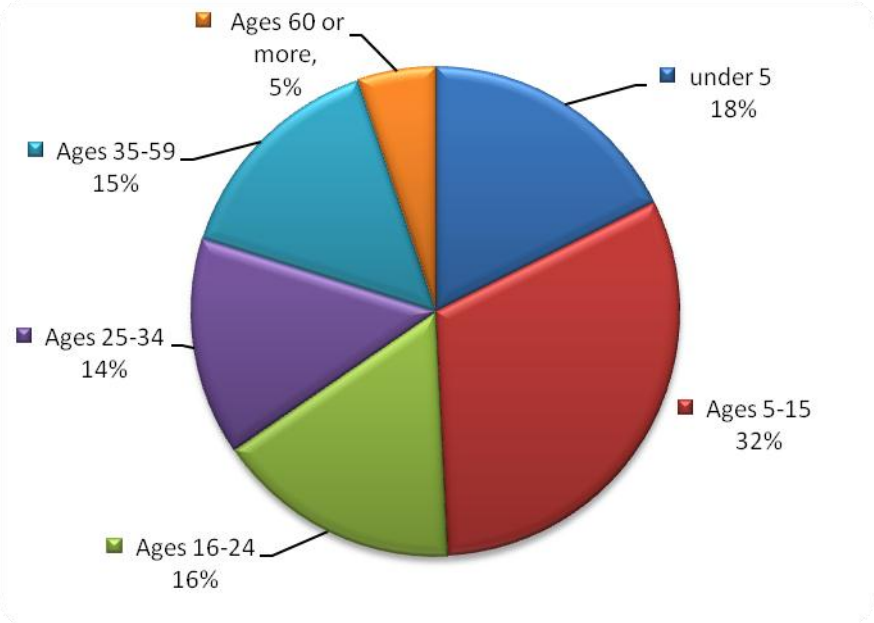
Table 2.3. Average household size by household categories and AGP status

Group	Category	1-2	3-4	5-6	7-8	9-10	11 or more	Average
National	All HHS	14.1	34.2	29.9	15.5	5.0	1.3	4.9
	Female HHHs	28.2	42.8	20.2	6.9	2.0		3.7
	Male HHHs	8.0	30.5	34.1	19.2	6.4	1.9	5.3
	Mature HHHs	14.1	27.9	28.9	19.8	7.2	2.0	5.2
	Youth HHHs	14.0	44.7	31.6	8.2	1.4	0.1	4.3
AGP woredas	All HHS	16.2	35.0	28.7	15.0	4.6	0.6	4.7
	Female HHHs	30.4	43.4	18.4	5.8	1.9		3.6
	Male HHHs	10.1	31.3	33.1	19.0	5.7	0.8	5.1
	Mature HHHs	15.3	29.0	28.7	19.6	6.6	0.8	5.0
	Youth HHHs	17.9	45.4	28.5	7.0	1.1	0.2	4.1
Non-AGP woredas	All HHS	13.4	34.0	30.3	15.6	5.2	1.5	4.9
	Female HHHs	27.4	42.5	20.8	7.2	2.0		3.8
	Male HHHs	7.4	30.3	34.4	19.2	6.6	2.2	5.4
	Mature HHHs	13.8	27.6	28.9	19.9	7.4	2.4	5.3
	Youth HHHs	12.9	44.5	32.5	8.5	1.5	0.1	4.3

Source: Authors' calculations using data from the AGP Baseline Survey 2011
Notes: HHHs and HHs stand respectively for 'Household Heads' and 'Households'

Figure 2.2 and Table 2.4 present the age structure of household members. The results reveal that the age of all household members in the sample averaged 21 years. A large number of household members are between 5 and 15 years of age accounting for about 32 percent of the total. The proportion of household members with ages 16-24, 25-34, and 35-59 were close to each other at 16.2, 14.4, and 15.0 percent. These shares clearly show that the bulk of the population is young. Using World Health Organization's definition where the youth is less than 35 years, 80 percent of household members in the surveyed areas are found to be young, while the World Bank's definition, those that are below 25 years, lowers this fraction to 65.5 percent. Taking household members between 16 and 59 years of age as working members, for each working member there are 1.19 non-working members.

Figure 2.2. Age Structure of household members



Source: Authors' calculations using AGP baseline survey data.

Excluding the 16-24 year old age group in which the proportion in female and male headed households is about the same, in female headed households children under 15 accounted for 47.2 percent of all members while the corresponding number in male headed households was about 49.8 percent. Considering all members, households with male heads have members about 2.5 years younger while considering members 5 years of age or older the difference drops to 1.4 years.

Members in non-AGP households were relatively older and this holds across genders as well excluding children under 5 years. This is because of the relatively larger proportions of 5-15 and 16-24 and smaller proportion of 60 or more years old categories in AGP households. The proportion of working members between ages of 16 and 59 is 46 percent in AGP woredas, slightly larger than the proportion in non-AGP woredas of 45.5 percent.

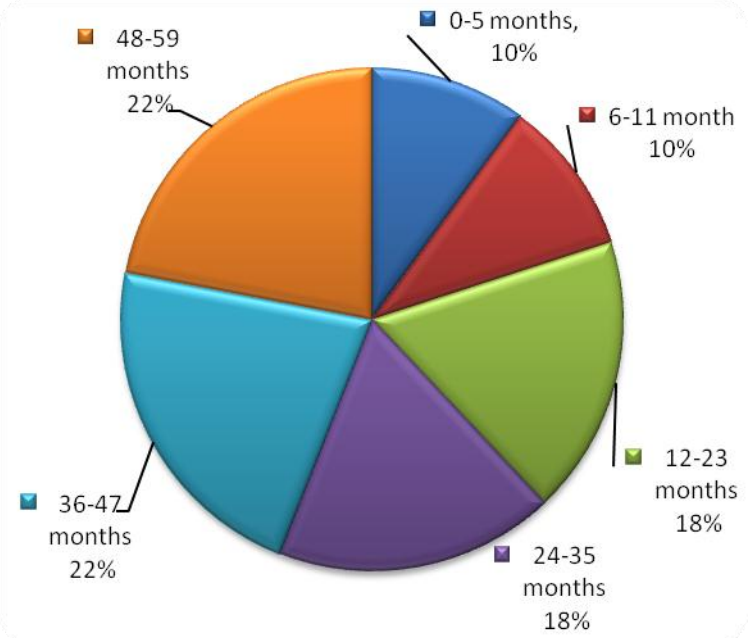
Table 2.4 Percentage of households with average age of members for different age groups by AGP status and household categories

Group	Category	under 5	Ages 5-15	Ages 16-24	Ages 25-34	Ages 35-59	Ages 60 or more	Average age (all members)	Average age (5 years or older
National	All HHS	17.6	31.6	16.2	14.4	15.0	5.2	21.2	24.6
	Female HHHs	12.6	34.6	19.5	9.6	15.5	8.2	23.1	25.6
	Male HHHs	19.2	30.6	15.2	15.9	14.8	4.3	20.6	24.2
	Mature HHHs	12.5	34.7	16.9	7.0	21.6	7.3	23.8	26.2
	Youth HHHs	28.1	25.2	14.8	29.4	1.4	1.0	15.9	20.5
AGP woredas	All HHS	17.0	32.2	16.6	14.1	15.3	4.9	21.1	24.3
	Female HHHs	11.9	35.7	19.5	8.7	15.6	8.7	23.4	25.7
	Male HHHs	18.5	31.1	15.7	15.7	15.2	3.7	20.4	23.9
	Mature HHHs	12.2	35.6	16.6	6.7	22.0	6.9	23.6	26
	Youth HHHs	27.2	24.8	16.5	29.8	1.0	0.7	15.9	20.2
Non-AGP woredas	All HHS	17.8	31.3	16.1	14.5	14.9	5.3	21.2	24.6
	Female HHHs	12.8	34.3	19.5	9.8	15.5	8.1	23.1	25.5
	Male HHHs	19.4	30.5	15.1	15.9	14.7	4.5	20.6	24.4
	Mature HHHs	12.5	34.4	17.0	7.1	21.5	7.4	23.8	26.3
	Youth HHHs	28.4	25.3	14.3	29.3	1.5	1.1	16	20.6

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: HHHs and HHs stand respectively for 'Household Heads' and 'Households'

Figure 2.3 and Table 2.5 summarize some of the descriptions on distribution of child members while in chapter eight we dedicate a section to deal with children health and nutrition. Interesting observations about both the proportions of different age categories and the average ages in these categories include the following. Children in the first age category of 0-11 months account for about one-fifth of the total. There is a decline in the proportion of households with an average number of children across age categories 0-11, 12-23, and 24-35 months from 20 percent to 18.1 and 18.4 percent respectively. The proportion of households with number of children with ages 36-47 months and 48-59 months is almost the same which is about 21.8 percent.

Figure 2.3. Proportion of children under 5 years of age



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Households with male heads have a larger proportion of children between the age group of 0 to 23 months compared to female headed households while the proportion of children in the other age categories is higher for female headed households. Young heads also have a relatively higher proportion of infants than matured ones. Regarding the AGP status classification, there is no pronounced difference in the distribution of children; it follows the pattern of the national estimates.

Table 2.5. Percentage of households with an average number of children under 5 years old (in months) of age groups by household categories and AGP status

Group	Category	0-11	12-23	24-35	36-47	48-59
National	All HHS	20.0	18.1	18.4	21.8	21.7
	Female HHHs	18.0	15.4	19.1	24.0	23.5
	Male HHHs	20.4	18.6	18.2	21.4	21.3
	Mature HHHs	17.4	15.7	18.5	23.9	24.5
	Youth HHHs	22.2	20.2	18.3	20.1	19.3
AGP woredas	All HHS	19.6	19.8	18.1	20.9	21.6
	Female HHHs	14.4	22.7	18.7	21.2	23.1
	Male HHHs	20.6	19.2	18.0	20.8	21.3
	Mature HHHs	17.7	17.9	18.9	22.0	23.6
	Youth HHHs	21.4	21.5	17.4	19.9	19.7
Non-AGP woredas	All HHS	20.1	17.6	18.4	22.1	21.7
	Female HHHs	19.0	13.3	19.2	24.8	23.6
	Male HHHs	20.4	18.4	18.3	21.6	21.3
	Mature HHHs	17.4	15.0	18.3	24.5	24.8
	Youth HHHs	22.4	19.8	18.5	20.1	19.1

Source: Authors' calculations using AGP baseline survey data
Notes: HHHs and HHs stand respectively for 'Household Heads' and 'Households

There is larger proportion of children 0-23 months in the AGP woredas relative to non-AGP woredas and the reverse is the case for 24-59 month old. Within the AGP status classification, there is a similar distribution of proportion of children in all categories for matured and young households. In the following section we describe levels of education of both household heads and other members.

2.2. Educational Characteristics of Households

Table 2.6 summarizes household heads' levels of education by gender and age. About 54 percent of the household heads surveyed in are illiterate, 11.6 percent have informal education often provided by religious schools or through adult education, while the remaining 34.4 are formally educated. Out of those with formal education, the largest proportion, 31 percent, had only primary education, 2.6 percent attended secondary schools, while only 0.8 percent had tertiary education (Table 2.6). However, the averages just stated hide the wide difference in education levels among male and female heads of households. While 43 and 80 percent of male and female heads are illiterate, 12 and 10 percent have informal education, and 40 and 9.4 percent attended primary school classes, respectively. Moreover, only 0.6 percent of the female heads of households have secondary or higher education relative to the 4.6 percent of male heads.

Table 2.6. Percentage of household heads with different education level by household categories and AGP status

Group	Category	Illiterate	Informal education	Primary education	Secondary education	Higher education
National	All HHS	54.0	11.6	31.0	2.6	0.8
	Female HHHs	79.8	10.2	9.4	0.4	0.2
	Male HHHs	42.9	12.3	40.2	3.6	1.0
	Mature HHHs	61.8	14.0	22.2	1.6	0.3
	Youth HHHs	41.1	7.7	45.5	4.3	1.4
AGP woredas	All HHS	63.7	7.7	26.0	2.3	0.3
	Female HHHs	87.4	4.1	8.1	0.4	
	Male HHHs	53.4	9.3	33.7	3.1	0.5
	Mature HHHs	70.7	9.3	18.5	1.3	0.2
	Youth HHHs	51.5	5.0	38.9	4.0	0.5
Non-AGP woredas	All HHS	51.0	12.9	32.6	2.7	0.9
	Female HHHs	77.4	12.1	9.8	0.4	0.2
	Male HHHs	39.7	13.2	42.3	3.7	1.2
	Mature HHHs	59.0	15.5	23.4	1.8	0.4
	Youth HHHs	37.9	8.6	47.5	4.3	1.7

Source: Authors' calculations using AGP baseline survey data.
Note: 'HHHs' and 'HHs' stand respectively for 'Headed households' and 'Households'

Remarkable differences also exist among the different age groups considered. While 61 percent of mature heads are illiterate this proportion drops to 41 percent for the younger heads. Moreover, except for the case of informal education, which is 14 percent among mature heads and 7.7 percent in the young heads category, formal education attended by the younger head groups is relatively larger for all education levels. The corresponding number with primary, secondary and higher education are 45.5, 4.3, and 1.4 percent for younger heads while they are only 22.2, 1.6, and 0.3 percent among the mature heads. One notable observation of comparisons made is that younger heads are relatively more educated through formal education while a relatively higher percentage of mature heads have attended informal education.

Across both AGP and non-AGP woredas a relatively larger proportion of male and younger heads are educated and formal education is more pronounced in the younger age groups. Moreover, while 63.7 percent of household heads in AGP woredas are illiterate this proportion is only 51 percent in non-AGP woredas. Among non-AGP woreda household heads 12.9 and 32.6 percent had informal and primary education respectively, while these numbers are respectively 7.7 and 26 percent among household heads in AGP woredas.

Table 2.7 presents the education level of household members by age and gender. Out of the 5-9 years old members in the households surveyed, 23 and 26 percent of the male and female members are attending primary school, respectively. The proportion of members in that age category who are attending informal education is about 7 percent for both male and female members while the proportion of illiterate male members is 70 percent compared to 67 percent for female members. For those members in the age group between 10 and 14 years, the proportion of male members enrolled in primary education was 77 percent while it was 79 percent for female members. About 18 percent of both male and female members between 10 and 14 years are illiterate. About 2 percent of the male members between 15 and 64 were educated beyond secondary school while this proportion was only 0.5 percent for females. The large majority of the female household members in this age group (56 percent) are illiterate while the proportion of illiterate male members is lower (31 percent) for the same age group. The percentage of male members with primary education is also higher at 51 percent compared to only 32 percent for female members. In terms of secondary education the percentage of male members between 15 and 64 years is 8.5 percent, almost double to that of female members, which is only 4.3 percent.

Table 2.7. Percentage of household members on education level by age and gender

	Illiterate	Informal Education	Primary	Secondary	Higher education
National	46.0	7.0	42.6	3.7	0.6
Male	38.1	7.6	48.4	4.9	1.0
Female	53.4	6.6	37.1	2.6	0.3
5-9 years					
Male	70.0	6.6	23.4	0.03	-
Female	66.8	6.9	26.4	0.005	-
10-14 years					
Male	18.0	4.9	76.9	0.2	-
Female	18.1	3.2	78.6	0.03	-
15-64 years					
Male	30.6	8.2	51.0	8.5	1.8
Female	56.0	7.2	32.1	4.3	0.5
65 and above					
Male	73.8	16.8	9.3	0.1	-
Female	91.0	8.4	0.1	-	0.6

Source: Authors' calculations using data from the AGP

2.3. Occupation of Household Heads and Members

Table 2.8 presents the occupation of household heads by gender, age, and AGP status. About 89 percent of the household heads surveyed are farmers or family farm workers and 6.8 percent are domestic workers, a category that is likely to include female heads in households while other members are engaged in agriculture. The remaining 4.3 percent of household heads are manual workers, trained workers, crafts persons, self-employed, students, or engaged in other occupations. Both male and female heads are dominantly farmers or family farm workers. However, the percentage of male heads who are farmers (96.6 percent) is higher than the female heads (71.1 percent).

In comparing AGP and non-AGP woredas, a relatively larger proportion of female household heads are farmers or family farm workers in AGP woredas. In addition, the proportion of female heads who are domestic workers is 18.3 percent compared to 23.3 percent in non-AGP woredas. In both AGP and non-AGP woredas, a slightly higher proportion of mature household heads are domestic workers while the reverse is true for farmers or family farm workers. The proportion of farmers or family farm workers is higher for younger heads compared to mature heads.

Table 2.8. Percentage of household head's occupation by household categories and AGP status

Group	Category	Farmer or family farm worker	Domestic work	Manual work	Trained worker	Crafts person	Self employed	Employed in service sector	Student	Other
National	All HHS	88.9	6.8	0.5	0.1	0.3	0.7	0.4	0.2	2.1
	Female HHHs	71.1	22.1	0.7		0.7	1.7	0.02	0.05	3.5
	Male HHHs	96.6	0.2	0.3	0.1	0.1	0.3	0.6	0.3	1.4
	Mature HHHs	87.2	8.5	0.4	0.1	0.4	0.5	0.2	0.03	2.8
	Youth HHHs	91.8	3.9	0.6	0.1	0.2	1.0	0.9	0.6	0.9
AGP woredas	All HHS	89.4	5.8	0.9	0.1	0.3	0.8	0.4	0.3	2.0
	Female HHHs	74.0	18.3	1.5		0.5	1.7	0.1	0.2	3.9
	Male HHHs	96.1	0.4	0.6	0.2	0.2	0.4	0.5	0.3	1.2
	Mature HHHs	87.9	7.3	0.8	0.1	0.3	0.5	0.3	0.1	2.6
	Youth HHHs	92.0	3.2	1.0	0.3	0.2	1.2	0.6	0.6	1.0
Non-AGP woredas	All HHS	88.8	7.1	0.3	0.03	0.3	0.7	0.4	0.2	2.1
	Female HHHs	70.2	23.3	0.5		0.8	1.7			3.4
	Male HHHs	96.8	0.1	0.2	0.05	0.1	0.3	0.6	0.3	1.5
	Mature HHHs	87.0	8.9	0.2	0.1	0.4	0.5	0.1		2.9
	Youth HHHs	91.8	4.1	0.5		0.2	1.0	1.0	0.6	0.8

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stands respectively for 'Household Heads' and 'Households'

In Table 2.9 we summarize the number of household members engaged in agricultural and non-agricultural activities by classifying the households by gender and occupation of heads. As we shall see in the succeeding chapters, the importance of agriculture among the households surveyed cannot be overemphasized. This is implied also by the number of non-head members engaged in agriculture in households where the heads are not engaged in agriculture, particularly in female headed households. Among the 29 and 3.4 percent of the households in which female and male heads are engaged in non-agricultural activities, about 11 percent of members in female headed households are engaged in agriculture while it is about 1 percent of members for the male headed households. Together with Table 2.8 the summary in Table 2.9 seem to also provide evidence about labour shortage in female headed households, an issue that we will investigate in Chapter 5.

Table 2.9. Percentage of household head's occupation of non-head members by household categories and AGP status

Occupation of other members	Male heads engaged in		Female heads engaged in		Full sample
	Agriculture	Non-agriculture	Agriculture	Non-agriculture	
Non-agriculture	46.8	2.3	43.2	18.0	52.7
Number of other members engaged in agriculture					
1	34.0	0.7	20.6	8.2	32.9
2	10.5	0.1	5.1	2.0	9.6
3	3.1	0.0	1.9	0.4	2.9
4 or more	2.3	0.1	0.4	0.3	1.9

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

2.4. Ownership of Assets

In this section we describe the households surveyed in terms of the materials of which their houses are made, which is an important variable to characterize households in rural Ethiopia, and in terms of the durable household assets they own. We also use total number of tropical livestock units (TLU) to describe households' assets. In addition to serve as a major source of draft power for the mixed crop-cattle farming applied by the households in the surveyed woredas, cattle serve also as a store of value and insurance against crop failure.

Housing Characteristics

One of the most important measures of households' wealth is housing characteristics and ownership of durable goods. Investing in one's dwelling place and holding durable assets is one way households build on their wealth. Table 2.10 below presents the materials from which households construct their houses to see differences in asset holding between households with different characteristics. The results from the survey suggest that the most common material households use to build their roofs is thatch (60 percent) followed by corrugated metal roof (37 percent). The percentages of households who have built their roof with plastic sheeting and materials like mud/sand/stone are 2 and 1.5 percent, respectively. In terms of the material used for roof construction, no significant difference is observed between male and female headed households.

For both AGP and non-AGP woredas most households have a thatched roof, followed by corrugated iron, however, the percentage of households with thatched roof is higher in non-AGP woredas compared to AGP-woredas. The proportion of households with thatched roof is

higher for young household heads compared to households with mature heads; more households with mature heads have corrugated metal as roof material compared to households with young heads.

Table 2.10. Percentage of household head's that used different materials to construct their dwelling by household categories and AGP status

Group	Category	Roof				Floor			
		Plastic sheeting	Thatched	Mud/ sand/ stone, etc.	Corrugated metal	Earth	Cow dung mixed with soil	Concrete/ stone/ cement	Tile
National	All HHs	1.9	59.7	1.5	36.9	62.1	37.2	0.5	0.1
	Female HHHs	2.0	67.1	1.6	29.3	62.5	36.9	0.5	0.04
	Male HHHs	1.8	56.5	1.5	40.2	62.0	37.4	0.5	0.2
	Mature HHHs	1.6	56.9	1.6	39.9	61.8	37.4	0.7	0.1
	Youth HHHs	2.4	64.4	1.4	31.8	62.6	37.0	0.3	0.1
AGP woredas	All HHs	1.4	55.8	1.8	41.0	56.5	42.6	0.8	0.2
	Female HHHs	0.9	63.4	1.8	33.9	56.2	43.0	0.6	0.2
	Male HHHs	1.6	52.5	1.8	44.1	56.6	42.4	0.8	0.2
	Mature HHHs	1.1	54.2	1.9	42.7	57.4	41.6	0.8	0.2
	Youth HHHs	1.8	58.4	1.7	38.0	54.9	44.3	0.7	0.1
Non-AGP woredas	All HHs	2.0	60.9	1.4	35.6	63.9	35.6	0.4	0.1
	Female HHHs	2.3	68.3	1.6	27.8	64.4	35.0	0.5	
	Male HHHs	1.9	57.7	1.4	39.0	63.6	35.8	0.4	0.2
	Mature HHHs	1.7	57.7	1.5	39.0	63.2	36.1	0.6	0.1
	Youth HHHs	2.5	66.2	1.3	30.0	64.9	34.8	0.1	0.2

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stands *respectively* for 'headed households' and 'households'

In terms of floor material, 62 percent of the households have not made any construction to improve their floor while 37 percent have cow dung mixed with soil as floor material. The proportion of households with concrete/stone/cement and tile as floor material are only 0.5 and 0.1 percent, respectively. No significant difference is observed in the floor material of houses of male and female headed households. A higher proportion of households in AGP woredas have an improved floor material compared to those in non-AGP woredas. In other words, the percentage of households with earth as floor material is lower for AGP woredas while the percentage of those with cow dung mixed with soil is higher for those in AGP woredas.

Durable Household Assets

Table 2.11 presents ownership of durable household assets by farm households. As indicated in the table below, ownership of bed stood first (34.6 percent) in terms of percentage followed by TV/radio and jewellery. The survey result revealed that male headed farmers acquire a larger percentage share of non-productive assets than their female counterparts. Very few households

own a car. Assets such as radio/TV and mobile are used to obtain information. However, very small proportions of households (13 percent) possess mobile phones. Considering households across AGP and non-AGP woredas, the results show that households in AGP woredas own more durable household assets than their counterparts in non-AGP woredas.

Table 2.11. Percentage of household head's asset ownership structure by household categories and AGP status

Group	Category	Stove	Sofa	Bed	Mobile	Radio/ Television	Jewellery	Table/ chair	Wheel-barrow cart	Car
National	**All HHS**	13.4	3.3	34.6	13.1	30.2	22.2	8.6	3.9	1.6
	Female HHHs	10.9	1.9	25.3	8.2	17.7	13.3	4.5	2.5	0.9
	Male HHHs	14.5	3.9	38.6	15.3	35.6	26.0	10.3	4.5	1.9
	Mature HHHs	13.7	3.5	35.2	12.2	28.7	20.5	8.7	3.9	2.0
	Youth HHHs	13.0	2.9	33.6	14.6	32.7	25.1	8.4	3.9	0.9
AGP woredas	**All HHS**	20.3	4.0	38.7	12.9	31.3	25.9	7.5	3.6	1.0
	Female HHHs	18.1	3.2	33.3	9.0	19.1	18.2	5.3	2.5	1.0
	Male HHHs	21.3	4.4	41.1	14.7	36.6	29.3	8.5	4.1	1.0
	Mature HHHs	21.0	4.3	39.5	12.4	30.8	22.7	7.1	3.6	1.1
	Youth HHHs	19.2	3.5	37.4	13.9	32.1	31.5	8.4	3.6	0.9
Non-AGP woredas	**All HHS**	11.3	3.0	33.3	13.2	29.9	21.0	8.9	4.0	1.8
	Female HHHs	8.6	1.5	22.8	8.0	17.2	11.7	4.3	2.6	0.8
	Male HHHs	12.4	3.7	37.8	15.4	35.3	25.0	10.9	4.6	2.2
	Mature HHHs	11.3	3.3	33.8	12.2	28.0	19.7	9.2	4.0	2.3
	Youth HHHs	11.2	2.6	32.4	14.8	32.9	23.1	8.4	4.0	0.9

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stand respectively for 'Headed Households' and 'Households'.

Ownership of Livestock

In addition to the flow of draft power services they provide, cattle also serve as a store of value. In fact there are parts of Ethiopia in which cattle are the only measure of household wealth. Tropical livestock units (TLU) are the standardised unit of choice in measuring livestock holding.[8] Accordingly, an average household in the surveyed woredas owned 3.75 cattle of different ages and sexes, 2.32 sheep and goats, 0.65 pack animals, and 0.002 camels, while the average number of TLU owned is 3.29. Disaggregating the number of cattle into their age and sex categories, an average household owned about 1.6 calves, young bulls, and heifers, 0.18 bulls, 0.97 oxen, and 1.01 cows, respectively.

An average female headed household owned fewer livestock of all types relative to an average male headed household, with the latter owning 37 percent more cattle, 21 percent more shoats

8Tropical livestock unit is often used to standardize the value of different types of cattle into camel units. The formula used to convert cattle into TLU is: TLU= total cattle*0.7+total sheep*0.1+total goats*0.1+total horse*0.8+total asses*0.5+total mules*0.7+ total camel

(sheep and goats), 67 percent more pack animals, and 39 percent more TLU. This holds true also among households that actually own cattle. Moreover, the proportion of households that own cattle is lower among female headed households relative to male headed households. The same pattern holds among mature and young headed households in which the mature heads own more animals.

Table 2.12. Average animal ownership by animal type, AGP status and household categories

Groups	Category	Calves, young bulls, and heifer	Bulls	Oxen	Cows	Sheep and goats	Pack animals	Camel	TLU
National	All HHs	1.60	0.18	0.97	1.01	2.32	0.65	0.002	3.29
	Female HHHs	1.40	0.11	0.72	0.93	2.15	0.47	0.001	2.75
	Male HHHs	1.83	0.22	1.16	1.13	2.60	0.79	0.003	3.82
	Mature HHHs	1.87	0.21	1.11	1.18	2.70	0.77	0.002	3.84
	Youth HHHs	1.43	0.16	0.90	0.90	2.09	0.57	0.003	2.96
AGP woredas	All HHs	1.89	0.24	1.22	1.16	2.12	0.66	0.007	3.80
	Female HHHs	1.55	0.21	0.81	1.01	1.82	0.41	0.000	2.96
	Male HHHs	2.03	0.26	1.38	1.22	2.24	0.76	0.009	4.14
	Mature HHHs	2.10	0.27	1.34	1.28	2.36	0.74	0.007	4.20
	Youth HHHs	1.54	0.19	1.01	0.96	1.71	0.51	0.007	3.10
Non-AGP woredas	All HHs	1.65	0.17	0.98	1.05	2.58	0.71	0.001	3.43
	Female HHHs	1.35	0.08	0.69	0.91	2.26	0.49	0.001	2.68
	Male HHHs	1.77	0.21	1.09	1.11	2.71	0.79	0.001	3.72
	Mature HHHs	1.80	0.18	1.04	1.15	2.81	0.78	0.001	3.73
	Youth HHHs	1.40	0.15	0.87	0.88	2.20	0.59	0.001	2.92

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stand respectively for 'headed households' and 'households'

Relative to an average household in the sample those in non-AGP woredas owned fewer livestock of every type, with the exception of sheep and goats and pack animals, which they owned about 22 and 8 percent more, respectively. Households in AGP woredas owned more young cattle, bulls, oxen, and cows, and the average TLU ownership was 11 percent higher. Male and mature headed households own more livestock of every type than female and young headed households in AGP woredas.

2.5. Summary

This chapter provides an overview of the demographic structure of households which are covered by the AGP baseline survey. The chapter contains descriptive analysis of demographic variables like age and size distribution of the households, marital status, education, and

occupation of the household heads and household members. In the discussion, emphasis is also given to differences between genders, age groups, and AGP status classification.

The average age for the household head is about 43 years while female heads tend to be older. Regarding marital status of heads, the majority of household heads are married. There are more female heads who are separated or divorced compared to male heads. However, there is no notable difference across households in AGP and non-AGP woredas. The surveyed households have on average five members with relatively smaller size for households with younger heads. However, there is little difference in household size distribution across AGP classification. Detailed statistics is also computed across age cohorts.

Regarding the educational status, about 54 percent of the household heads surveyed are illiterate. When looked across gender, a large majority of the female heads are illiterate, as well as more than half of the female household members. More young heads had formal education, while a higher proportion of mature heads had some sort of informal education. Notable differences also exist among the different age groups.

The occupational structure of households shows that about 89 percent of the household heads surveyed are farmers or family farm workers and even the proportion reaches about 97 for male headed households. Female headed households tend to diversify their occupation to non-agricultural activities a little more.

Chapter 3: Characteristics of Crop production and Decision Making

Almost all households in rural Ethiopia derive their livelihood from agriculture or related activities. This is true for the millions of households residing in the study area. Among households included in the sample over 96.6 and 71 percent of male and female heads are engaged in agriculture, respectively. In households whose livelihood is mainly dependent on agriculture, it is important to look at the responsible member in decision making of certain activities.

In the first section of this chapter we describe the importance associated to different crop categories in terms of the number of plots used and the number of households cultivating them. In the second section we characterize the households in terms of members responsible for making decisions on crop and livestock production and use.

3.1. Characteristics of crop production

For the purpose of showing the importance associated to different crops we first describe the number of plots used to grow the six crop categories of cereals, pulses, oilseeds, vegetables, root crops, and fruits. The second section describes the number of households growing the crop categories. Due to the importance in the number of plots used and the number of households growing enset and coffee, we include them in the description.

Number of Plots by Use

A total of 46.9 million plots were sown to one or more crops or were under permanent crops during the 2010/11 Meher — the main agricultural season of the year. Out of the total number of fields 75/25 percent were operated by households with male/female heads, and 65/35 percent by households with matured heads/young heads (Table 3.1). Households in non-AGP cultivated 75.8 percent of the total amount of plots; households in AGP woredas cultivated the remaining 24.2 percent of plots. Though the distribution of number of plots by gender and age slightly varies across AGP and non-AGP woredas, it is generally close to the average in the overall sample. Relative to the overall sample and non-AGP woredas, fewer plots are operated by households with female and young heads in AGP woredas.

Table 3.1. Number of plots cultivated in Meher 2010/11 by household categories and AGP status

Group	Category	Number (000)	Percent
National	All Households	46,920	100
	Male headed Households	35,330	75.3
	Female headed Households	11,590	24.7
	Youth headed Households	16,383	34.9
	Mature headed Households	30,537	65.1
AGP woredas	All Households	11,358	24.2
	Male headed Households	8,651	76.2
	Female headed Households	2,707	23.8
	Youth headed Households	3,862	34.0
	Mature headed Households	7,496	66.0
Non-AGP woredas	All Households	35,562	75.8
	Male headed Households	26,680	75.0
	Female headed Households	8,882	25.0
	Youth headed Households	12,521	35.2
	Mature headed Households	23,041	64.8

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Households have reported to have grown 53 crop types. Ten of the crop types grown are cereals, 9 are pulses, 5 are oilseeds, 7 are vegetables, 8 are root crops, and 5 are fruits. While we single out enset and coffee out of the remaining group of relatively heterogeneous crops, the remaining 7 crops are categorized as "all others". Out of the total cultivated plots 55 percent were under cereals, pulses were second in importance at 12.7 percent, with coffee and enset following at 7.3 and 5.9 percent, respectively. Root crops, oilseeds, fruits, and vegetables were important in that order and together accounted for about 11.7 percent of the plots (Table 3.2).

The proportion of plots used to grow each of the crop categories differs across male and female headed households. However, their difference is less than 0.5 percent in all crop categories except households with male heads allocated 0.9 percent more for cereals. Similarly the proportion allocated by households with mature and young heads are similar. In general, households with mature heads allocated relatively more plots to grow pulses and fruit crops and fewer plots to grow cereals, oilseeds, root crops, and enset. Patterns observed in the aggregated sample hold across male and female headed and mature and young headed households in both AGP and non-AGP woredas with few exceptions.

Table 3.2. The distribution of plots by crop type, household categories, and AGP status (percent)

Group	Category	Cereals	Pulses	Oil seeds	Vegetables	Root crops	Fruit crops	Coffee	Enset
National	All HHs	55.3	12.7	3.0	2.0	4.3	2.4	7.3	5.9
	Male HHHs	55.5	12.7	3.1	1.9	4.2	2.3	7.4	5.6
	Female HHHs	54.6	12.7	2.7	2.4	4.5	2.8	7.1	6.8
	Youth HHHs	55.7	12.2	3.2	2.0	4.5	2.2	7.3	6.0
	Mature HHHs	55.0	13.0	2.9	2.1	4.2	2.6	7.3	5.8
AGP woredas	All HHs	56.2	10.8	3.4	3.1	3.7	2.5	5.0	6.1
	Male HHHs	56.3	10.8	3.6	3.0	3.8	2.4	4.9	5.8
	Female HHHs	55.6	10.5	2.8	3.4	3.3	2.7	5.3	6.8
	Youth HHHs	56.3	9.9	3.5	3.5	4.4	2.5	4.8	6.4
	Mature HHHs	56.1	11.2	3.3	2.9	3.3	2.5	5.2	5.9
Non-AGP woredas	All HHs	55.0	13.3	2.9	1.7	4.5	2.4	8.0	5.8
	Male HHHs	55.2	13.3	2.9	1.6	4.3	2.3	8.1	5.5
	Female HHHs	54.3	13.4	2.7	2.0	4.8	2.8	7.6	6.8
	Youth HHHs	55.5	13.0	3.2	1.5	4.5	2.1	8.0	5.9
	Mature HHHs	54.7	13.5	2.7	1.8	4.4	2.6	8.0	5.8

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: around 7 % of the plots from the whole sample were allocated for other and mixed crops. 'HHs' and 'HHHs' stand respectively for 'Households' and 'Headed Households'

Cropping Patterns

Households in the survey planted on average at least two types of crop categories. Table 3.3 lists the number and proportion of households growing one or more of the 8 important crop categories/crops. As expected, the largest proportion (about 91 percent) of the households planted cereals.

Next in importance to cereals are pulses cultivated by 41 percent of the households. Enset and coffee are close to each other as 3rd and 4th in importance. This ranking of importance holds across gender and age categories, with the exception that coffee is more important than enset in female headed households.

The proportion of households growing the different crops in AGP and non-AGP woredas is mostly similar as discussed in the above paragraph with the most notable exception that enset is less important than coffee in the non-AGP woredas (but for female headed households in non-AGP woredas enset is more important than coffee — as opposite to the finding for female headed households in all households). In addition, vegetables are less important than fruits for all categories of non-AGP woredas.

Table 3.3. Proportion of households growing different crops by household categories and AGP status

Group	Category	Cereals	Pulses	Oil seeds	Vegetables	Root crops	Fruit crops	Coffee	Enset
National	All HHs	90.57	41.19	11.8	9.51	17.92	8.7	26.02	26.5
	Female HHHs	91.66	43.51	13.17	9.58	18.64	8.98	26.77	26.65
	Male HHHs	97.98	35.72	8.57	9.35	16.24	8.04	24.25	26.14
	Youth HHHs	90.16	38.67	11.86	8.59	17.54	7.71	24.21	25
	Mature HHHs	90.81	42.68	11.73	10.06	18.16	9.29	27.09	27.39
AGP woredas	All HHs	92.89	33.6	13.67	14.54	16.14	9.24	19.02	27.68
	Female HHHs	89.63	28.56	9.72	12.97	12.6	8.54	18.48	26.19
	Male HHHs	94.25	35.69	15.31	15.2	17.62	9.52	19.25	28.31
	Youth HHHs	92.32	31.78	13.44	15.01	17.26	8.59	16.51	27.02
	Mature HHHs	93.22	34.64	13.79	14.28	15.51	9.6	20.45	28.07
Non-AGP woredas	All HHs	89.85	43.52	11.22	7.97	18.47	8.54	28.17	26.13
	Female HHHs	87.49	37.88	8.23	8.26	17.34	7.89	25.99	26.13
	Male HHHs	90.86	45.93	12.5	7.84	18.95	8.81	29.1	26.14
	Youth HHHs	89.51	40.72	11.38	6.68	17.62	7.45	26.49	24.4
	Mature HHHs	90.06	45.2	11.13	8.74	18.98	9.19	29.17	27.18

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stands respectively for 'Headed households and 'households'

3.2. Decision Making in Agriculture

In this section we describe patterns in decision making for production of both crops and livestock and livestock products. To that end we use three aspects of decision making in agricultural production: types of crop to produce, how to market crop outputs, and production of livestock and livestock products. We provide the number and proportion of households in which different members are responsible for making decision on which crop to produce and on marketing of output in Tables 3.4 and 3.5, respectively, while Table 3.6 summarizes production decision for livestock and livestock products.

Table3.4 shows proportion of household members that make decision on what to plant. In most households it is the head that most often makes production and consumption decisions. In 72 percent of the surveyed households it is the head who decide what corps to plant, in 86 percent of the households the head decides how to market crop output, and in 92 percent of the households he/she determines which livestock to keep (Tables 3.4-3.6). It is interesting to note that in 21 percent of the households decisions on what crop to produce are jointly decided by the head and spouse. The proportion of households in which the spouse is responsible in deciding what crop to produce, 3.5 percent, is about the same as the proportion in which adult children make the decision alone or jointly with the head and the spouse, which is about 3.6 percent.

There are remarkable differences between households with male and female heads. In 69.6 percent of the male headed households the head decides what crop to plant while this proportion is larger among female headed households with 79.6 percent. By contrast, the proportion in which the head and spouse make the decision jointly is much larger among male headed households at 26 percent relative to the 4.7 percent in female headed households. This is largely because only 31 percent of the female heads are married, compared to 94 percent of the male heads.

In both young and mature headed households most decision on crop planting are made by the head. One remarkable difference is that in more decisions on are made by both head and spouse in young headed households (i.e., 23.2 percent) than in mature headed households (i.e., 19.3 percent). To the contrary, in households with mature heads a larger proportion of adult children make a decision (i.e., 5.1 percent), compared to adult children in households with young heads (i.e., 0.6 percent).

The decision making pattern in non-AGP woredas differs only slightly from the average for the overall sample, with slightly fewer heads but slightly more heads and spouses making the decisions. The exact opposite of this holds among AGP households.

Table 3.4. Household members that make decision on what crop to plant by AGP status

Group	Category	Head	Spouse	Head and spouse	Adult children	Head and adult children	Spouse and adult children
National	All HHs	72.3	3.5	20.6	1.2	1.8	0.6
	Male HHHs	69.6	3.1	26.2	0.2	0.2	0.7
	Female HHHs	79.9	4.7	4.7	4.1	6.4	0.1
	Youth HHHs	72.0	4.1	23.2	0.2	0.4	0.03
	Mature HHHs	72.4	3.2	19.3	1.7	2.5	0.9
AGP woredas	All HHs	75.7	3.9	17.8	0.8	1.6	0.3
	Male HHHs	73.6	3.8	22.1	0.1	0.2	0.3
	Female HHHs	82.1	4.2	4.5	3.1	5.8	0.4
	Youth HHHs	76.3	3.8	19.2	0.1	0.5	0.1
	Mature HHHs	75.4	3.9	17.1	1.1	2.1	0.4
Non-AGP woredas	All HHs	71.3	3.4	21.5	1.3	1.9	0.7
	Male HHHs	68.4	2.9	27.4	0.2	0.2	0.9
	Female HHHs	79.2	4.9	4.8	4.4	6.6	0.1
	Youth HHHs	70.8	4.2	24.4	0.3	0.4	0.02
	Mature HHHs	71.5	2.9	20	1.9	2.7	1

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stands respectively for 'Headed households' and 'households'

Table 3.5 presents the percentage of household members who make decisions on the marketing

of crop products. For 86 percent of the households, household heads are the sole deciders on issues related with crop marketing while the spouse makes such decision in only 8 percent of the households. In comparing male and female headed households, a higher proportion of female heads make the marketing decisions while decisions by the spouse are more prevalent in the male headed households. When compared to mature headed households, a higher percentage of marketing decisions in young headed households are made by household heads. In AGP woredas more decisions are made by the head or spouse, and less are made by the children, than in the non-AGP woredas. This pattern is also observed when looking into the different household categories within households in AGP and non-AGP woredas.

Table 3.5. Household members that make decision on marketing of crop by household categories and AGP status

Group	Category	Head	Spouse	Child	Other
National	All HHs	86.43	8.13	4.58	0.86
	Male HHHs	85.18	10.59	3.8	0.43
	Female HHHs	90.13	0.86	6.9	2.11
	Youth HHHs	89.46	7.65	2.24	0.65
	Mature HHHs	84.64	8.42	5.97	0.97
AGP woredas	All HHs	87.49	9.13	2.44	0.94
	Male HHHs	85.85	11.77	1.92	0.46
	Female HHHs	92.5	1.09	4.03	2.38
	Youth HHHs	89.96	8.06	1.56	0.42
	Mature HHHs	86.11	9.73	2.93	1.23
Non-AGP woredas	All HHs	86.06	7.78	5.34	0.82
	Male HHHs	84.94	10.17	4.47	0.42
	Female HHHs	89.33	0.78	7.88	2.01
	Youth HHHs	89.3	7.51	2.47	0.72
	Mature HHHs	84.11	7.94	7.06	0.89

Source: Authors' calculations using data from the AGP Baseline Survey
Note: 'HHHs' and 'HHs' stands respectively for 'Headed households' and 'households'

In what looks like an extension of the decision on crop to cultivate, the number and type of livestock that a household keeps is decided by the head in an even larger proportion of households. While this is true for most livestock in about 91 percent of the households, it is markedly lower for chickens at 68 percent, in which the spouse makes the decision in 24 percent of the households. The proportion of female heads that make the decision on the number of chickens to keep is larger at 92.5 percent. In male headed households the decision on how to use milk and milk products is decided by the spouse while in female headed households it is the head that makes such decision, which together imply that such decisions are made by female spouses or female heads.

Table 3.6. Proportion of household members that make decisions on livestock and livestock products by household head categories

	Cattle			Goats & Sheep			Pack Animals			Chicken		
Category	**Head**	**Spouse**	**Child**	**Head**	**Spouse**	**Child**	**Head**	**Spouse**	**Child**	**Head**	**Spouse**	**Child**
All HHs	91.6	2.8	4.4	90.5	2.7	4.8	90.9	0.8	5.5	67.8	24.3	6.4
Male HHHs	92.2	3.3	3.5	92.9	3.1	3.2	91.7	0.9	5.7	58.2	33.1	7.2
Female HHHs	89.6	1.3	7.3	84	1.3	9.4	86	0	4.4	92.5	1.7	4.5
Youth HHHs	90.6	3.5	4.3	91.5	3.3	3.5	88.9	0.1	7.4	67.1	26.3	3.4
Mature HHHs	92.3	2.4	4.4	89.9	2.3	5.6	92.2	1.3	4.3	68.3	22.8	8.6
	Milk			**Cheese**			**Butter**			**Yoghurt**		
	Head	**Spouse**	**Child**	**Head**	**Spouse**	**Child**	**Head**	**Spouse**	**Child**	**Head**	**Spouse**	**Child**
All HHs	26.5	65.62	1.11	34.16	56.61	0	31	62.8	3.11	71.21	28.79	0
Male HHHs	4.23	90.62	0	10.63	80.1	0	6.8	88.24	1.59	26.86	73.14	0
Female HHHs	84.97	0	4.03	90.85	0	0	90.55	0.22	6.85	100	0	0
Youth HHHs	19.11	73.38	1.11	37.18	58.87	0	36.15	57.62	3.86	95.17	4.83	0
Mature HHHs	36.47	55.17	1.11	27.79	51.85	0	22.07	71.79	1.82	29.14	70.86	0

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stand respectively for 'Headed households' and 'households'

3.3. Summary

The chapter summarises crop allocation and decision making of households in the production and sale of crop and livestock products. In the surveyed households, the total number of plots cultivated for Maher season was 46.9 million. A significant percentage of variation was observed in the proportion of plots allocated for each crop categories. Cereals took the largest proportion of plots used for production, followed by pulses and coffee. This result holds true for AGP and non-AGP woredas, except in AGP woredas enset is more important than coffee. Decision making on crop production was almost always made by the head and head and spouse. Likewise, decision on marketing of crop produced is mostly done by the head and followed by the spouse though the percentage is much lower than the proportion of the head. Decisions on the number and type of livestock that a household keeps is decided by the head, however, for chickens heads do decide in most cases, but the proportion of households in which the spouses make the decision is markedly larger than for other livestock types. A noticeable result was found regarding the decision making on the production of milk and milk products; these decisions are made by the female spouses and female heads.

Chapter 4: Productivity in Agriculture

Enhancing smallholders' productivity, via improvements in input provision and market access, is the central objective of AGP. Tracking indicators of crop productivity is thus a key component of monitoring progress and impact associated with AGP. The AGP baseline survey collected data on household-level quantity of output produced and inputs applied for that purpose. The information obtained is subsequently used to generate estimates of the desired productivity indicators. This chapter reports on output levels, yields, and labour productivity estimates for both crop and, to a more limited extent, livestock production.

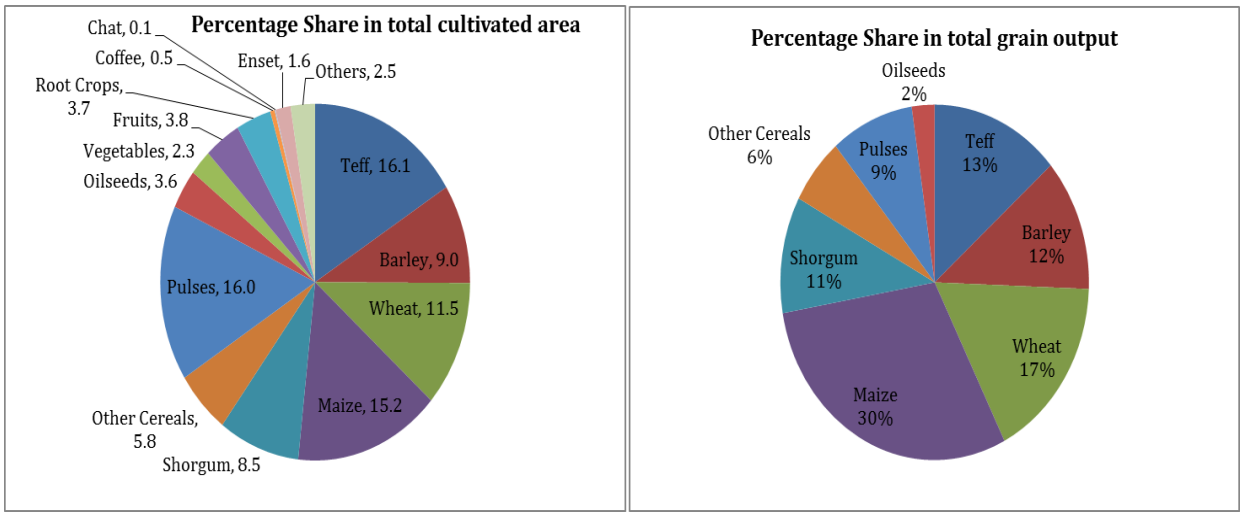
4.1. Productivity in the Crop Sub-sector

Land Productivity

A recap on the composition of crop output is provided as a prelude. That is followed by a brief look at reported output levels and plot sizes. All of these are helpful dimensions that contextualize subsequent analysis of yields.

More than fifty types of crops were cultivated by farmers covered by the baseline during Meher 2010/11 (see chapter 3 for more details). Such diversity makes both analysis and interventions rather challenging. For the purpose of the descriptive analysis, these crops are categorised into fifteen groups — Teff, Barley, Wheat, Maize, Sorghum, Other Cereals, Pulses, Oilseeds, Vegetables, Fruits, Root Crops, Coffee, Chat, Enset, Others.[9] Figure 4.1 summarizes the share of these groups in total cultivated area and total grain output (measured as an un-weighted physical sum over output of individual crops).

Figure 4.1 Shares in cultivated area and grain output



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

[9] In subsequent sections 'Other Cereals' are frequently combined with 'Others'.

The first striking feature conveyed by the figure is the predominance of cereals — thus justifying the inclusion of five single cereals as distinct groups. All cereals together accounted for 66 percent of acreage. Among the cereals, teff (16.1 percent) recorded the largest share of cultivated area, followed closely by maize (15.2 percent) and wheat (11.5 percent). As a group, pulses took 16 percent of area cultivated, thereby bringing the share of grains to a total of 85.6 percent (with oilseeds also included). Fruits (3.8 percent), root crops (3.7 percent), and oil seeds (3.6 percent) made up the other major non-cereal crop categories with significant shares. The acreage share of enset is only 1.6 percent.

It is noteworthy that teff, having the largest acreage share, did not make it the top contributor of grain output. It only reached third place with 13 percent. With 30 percent, maize had by far the largest share in grain output, while wheat (17 percent) had the second largest.

There is some variation across AGP and non-AGP woredas in terms of crop shares in cultivated area. On average, AGP woredas had larger acreage shares going to teff, sorghum, and oil seeds (see Annex Figure B.4.1). In contrast, non-AGP woredas recorded greater shares to barley, maize, pulses, and coffee. The two sub-samples had essentially the same shares for the other crops.

Output Levels

Table 4.1 reports average Meher output levels estimated from the AGP baseline data. For each crop, the estimates are based on declared output levels of households who have reported to be engaged in the production of that crop. The estimates reveal that average levels of output per household are not very high. At the national level, they range from 1.3 quintals for coffee through to 5.8 quintals for maize. Even lower numbers are observed if the median is considered instead of the mean. For instance, the overall mean output of teff-producing households was 3.1 quintals. The median, on the other hand, is 2 quintals, implying that half of these households produced less than 2 quintals. In addition, as expressed by the standard deviations included in the table, the average levels hide considerable variation across households. Figure 4.2 presents a more visual way of summarising this variation. It plots the mean levels of output per household by output quintiles for the five major cereals. Households in the bottom quintile (Quintile I) on average produced less than a quintal for all the cereals, while those in the top quintile (Quintile V) managed to produce a much higher average output, i.e., 8 quintals for teff through to 18 quintals for sorghum. Annex Figures B.4.2 and B.4.3 show that comparable differences were also prevalent in relation to other crops as well as within AGP and non-AGP woredas.

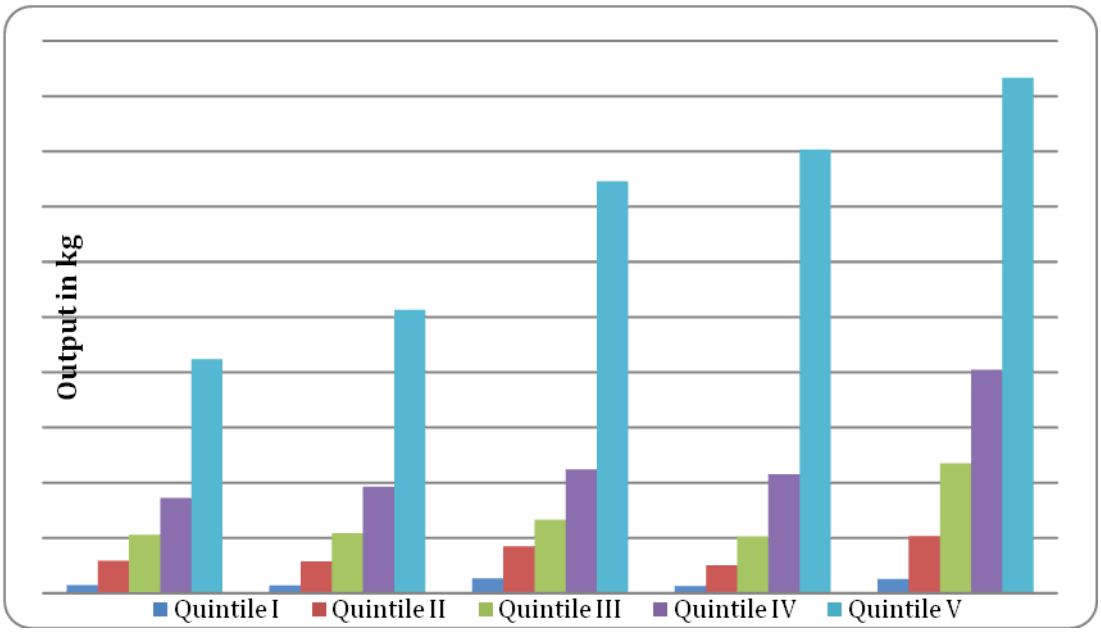
Table 4.1. Average output (quintals), by AGP status and household head characteristics

Group	Category	Statistic	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil Seeds	Vege tables	Root Crops	Fruit Crops	Chat	Coffee	Enset
National	All HHs	Mean	3.1	4.3	5	5.8	5.2	1.7	1.7	2.7	4.8	1.5	1.8	1.3	3.8
		Median	2	2.8	2.8	3	3	1	1	1	2.1	0.3	0.4	0.5	1.5
		SD	3.7	4.8	7.5	9.8	7.3	2	2.5	5.0	7.6	7.3	6.1	2.1	7.8
	Male HHHs	Mean	3.4	4.4	5.2	6.6	5.8	1.8	1.8	2.8	5.4	1.1	1.9	1.2	4
		Median	2	2.5	2.8	3	3	1	1	1	2.5	0.2	0.4	0.5	1.5
		SD	4	5	7.7	11	8	2.2	2.6	5.4	8.5	3.8	6.8	2.1	8.5
	Female HHHs	Mean	2.4	4	4.5	3.8	3.6	1.4	1.4	2.6	3.5	2.6	1.3	1.3	3.2
		Median	2	3	2.1	2	2	1	1	1	2	0.5	0.3	0.5	1
		SD	2.3	4.1	6.9	5.8	4.5	1.5	2.2	3.6	4.3	12	2.6	2	5.9
	Mature HHHs	Mean	3.2	4.2	5	5.8	5.3	1.7	1.7	2.7	4.9	1.5	1.8	1.3	3.8
		Median	2	2.8	2.8	3	3	1	1	1	2.1	0.3	0.4	0.5	1.5
		SD	3.7	4.8	7.6	9.9	7.4	2	2.6	5	7.8	7.5	6.1	2.1	8.0
	Youth HHHs	Mean	2.7	4.5	4.6	5.6	4.6	1.6	1.7	2.4	4	1	1.6	0.9	2.7
		Median	2	3	2.5	3	2	1	1	1	2.8	0.4	0.5	0.5	1.5
		SD	2.3	4.5	5.5	7.3	5.9	1.7	2.2	4	4	1.6	6	1	4
AGP woredas	All HHs	Mean	3.4	4.1	5.4	5	7.5	2.2	3.1	2.5	4.6	1.3	2.7	1.3	3.6
		Median	2.5	2.4	2.8	2.5	5	1.5	2	1	2	0.2	0.6	0.5	1.5
		SD	3.6	5	8	7.9	8.8	2.5	4.2	5	8.3	5.9	6.9	2.8	7.3
	Male HHHs	Mean	3.6	4.1	5.6	5.4	8.3	2.2	3.2	2.4	5	1.5	2.9	1.4	3.6
		Median	2.5	2.3	3	3	5	1.5	2	1	2.1	0.2	0.6	0.5	1.5
		SD	3.8	5.1	8.4	7.2	9.4	2.6	4.2	5	9.1	6.8	7.6	3	7.2
	Female HHHs	Mean	2.8	3.9	4.8	3.9	5.3	2.1	2.6	2.6	3.4	0.9	2.3	1.1	3.6
		Median	2	2.4	2.5	2	4	1.5	1.5	1	2	0.2	0.6	0.5	1.5
		SD	2.9	4.5	6.6	9.4	6.1	2.3	3.8	4.7	4.4	2.2	4	2.4	7.4
	Mature HHHs	Mean	3.5	4.1	5.4	5	7.6	2.2	3.1	2.5	4.7	1.3	2.7	1.3	3.6
		Median	2.5	2.4	2.8	2.5	5	1.5	2	1	2	0.2	0.6	0.5	1.5
		SD	3.6	5	8	8	8.8	2.5	4.2	4.9	8.5	6.1	6.6	2.9	7.3
	Youth HHHs	Mean	2	3.6	5.6	5	6.5	2	2.8	1.5	2.6	1.3	3.7	0.8	3.5
		Median	1.5	2.8	3	2.8	4	1.5	2	0.5	1	0.2	0.2	0.3	1
		SD	2	3.2	8.1	6.3	8.3	2.9	3.2	5.3	3.4	2.3	11	1.3	6.6
Non-AGP woredas	All HHs	Mean	3.4	4.1	5.4	5	7.5	2.2	3.1	2.5	4.6	1.3	2.7	1.3	3.6
		Median	2.5	2.4	2.8	2.5	5	1.5	2	1	2	0.2	0.6	0.5	1.5
		SD	3.6	5	8	7.9	8.8	2.5	4.2	5	8.3	5.9	6.9	2.8	7.3
	Male HHHs	Mean	3.3	4.4	5.1	6.9	4.9	1.8	1.2	2.9	5.5	0.9	1.6	1.2	4.1
		Median	2	2.8	2.8	3	2.5	1	0.8	1	2.5	0.2	0.4	0.5	1.5
		SD	4.1	5	7.5	12	7.2	2	1.1	5.6	8.3	1.9	6.4	1.8	8.9
	Female HHHs	Mean	2.1	4	4.4	3.8	3	1.2	0.9	2.6	3.5	3.1	0.9	1.4	3.1
		Median	1.8	3	2	2.1	1.8	0.8	0.8	1.4	2	0.5	0.2	0.5	1
		SD	1.9	4	7	4.3	3.6	1.2	0.6	3.1	4.3	14	1.7	1.9	5.4
	Mature HHHs	Mean	3	4.3	4.9	6	4.4	1.6	1.1	2.8	4.9	1.6	1.5	1.3	3.9
		Median	2.0	2.8	2.5	3	2	1	0.8	1	2.1	0.3	0.3	0.5	1.4
		SD	3.8	4.7	7.5	10	6.6	1.9	1	5	7.6	7.9	5.9	1.9	8.2
	Youth HHHs	Mean	2.9	4.7	4.3	5.8	3.6	1.5	1.1	2.9	4.4	0.9	0.8	0.9	2.4
		Median	2.0	4	2.1	3	2	1	0.5	2	3.5	0.4	0.5	0.5	1.5
		SD	2.4	4.7	4.5	7.6	3.8	1.4	1.2	3	4.2	1.2	0.7	0.9	2.7

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: HHHs and HHs stand respectively for 'Headed Households' and 'Households'. SD denotes 'Standard Deviation'.

As can be seen from Table 4.1 some of this heterogeneity is correlated with household location as well as gender and age differences among household heads. Among the crops considered, average household output was higher in AGP woredas relative to non-AGP woredas for teff, wheat, maize, sorghum, pulses, oil seeds, and chat. Average output was greater in non-AGP woredas for the other crops. However, the only statistically significant differences were the bigger output levels for sorghum, pulses, and oilseeds in AGP woredas (see Annex Table B.4.1).[10] The gender of the household head is another important correlate. Male headed households reported higher output levels in almost all crops, and we found statistically significant ones for six crops (Annex Table B.4.1). These differences largely persist across AGP and non-AGP woredas. In contrast, age of the household head appears not to matter much, except for coffee production (mature heads reporting higher levels of coffee output).

Figure 4.2. Average household cereal production in kg, by output quintiles



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Average Plot Size

Plot sizes are briefly considered to complement the perspective provided by average output levels reported on above.

Table 4.2 reveals that plot sizes were not large in the study areas. Average plot sizes hover around a third of a hectare. Moreover, no significant difference in average plot size can be detected across annual crops, though sorghum and oilseeds had the two highest average plot sizes. Both features are consistent with the usual characterization of the farmers covered by the survey as smallholders. Looking across household types, it is notable that male headed

[10] Roughly speaking, statistically significant differences are those which are more than a chance occurrence.

households have slightly bigger plots compared to female headed households. So did mature headed households relative to young headed households. Significant size differences were observed within crops, however. Calculated standard deviations are high, particularly relative to the averages. There are really tiny plots as there are much-larger-than-average plots. As the next section reveals, this considerable variation in plot size has implications for yield estimates.

Table 4.2. Average plot size (ha), by crop type

Group	Category	Statistic	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil Seeds	Vege tables	Root Crops	Fruit Crops	Chat	Coffee	Enset
National	All HHHs	Mean	0.3	0.28	0.29	0.27	0.38	0.22	0.36	0.21	0.21	0.24	0.2	0.2	0.2
		SD	0.29	0.38	0.29	0.45	0.36	0.31	0.43	0.68	0.55	0.61	0.4	0.4	0.4
	Female HHHs	Mean	0.28	0.28	0.28	0.24	0.33	0.21	0.33	0.17	0.3	0.3	0.2	0.2	0.2
		SD	0.22	0.35	0.25	0.38	0.28	0.34	0.32	0.54	0.7	0.9	0.4	0.4	0.4
	Male HHHs	Mean	0.31	0.28	0.3	0.28	0.39	0.22	0.36	0.23	0.19	0.2	0.2	0.2	0.2
		SD	0.3	0.39	0.3	0.47	0.38	0.3	0.46	0.73	0.48	0.45	0.4	0.4	0.3
	Mature HHHs	Mean	0.3	0.28	0.29	0.28	0.38	0.22	0.36	0.22	0.21	0.21	0.2	0.2	0.2
		SD	0.29	0.39	0.29	0.45	0.36	0.31	0.44	0.69	0.56	0.43	0.4	0.4	0.4
	Youth HHHs	Mean	0.29	0.27	0.31	0.21	0.31	0.18	0.34	0.11	0.2	0.78	0.2	0.3	0.3
		SD	0.25	0.25	0.24	0.24	0.25	0.15	0.28	0.24	0.29	1.78	0.3	0.4	0.3
AGP woredas	All HHHs	Mean	0.33	0.28	0.29	0.25	0.53	0.22	0.53	0.18	0.21	0.23	0.2	0.3	0.2
		SD	0.32	0.27	0.31	0.35	0.48	0.27	0.59	0.59	0.54	0.6	0.5	0.5	0.4
	Female HHHs	Mean	0.28	0.26	0.32	0.22	0.45	0.22	0.48	0.15	0.17	0.27	0.2	0.2	0.2
		SD	0.24	0.24	0.3	0.3	0.39	0.23	0.52	0.51	0.26	0.73	0.6	0.5	0.3
	Male HHHs	Mean	0.34	0.28	0.29	0.26	0.56	0.22	0.55	0.19	0.22	0.22	0.2	0.3	0.2
		SD	0.33	0.28	0.31	0.36	0.49	0.28	0.6	0.62	0.59	0.55	0.5	0.5	0.4
	Mature HHHs	Mean	0.33	0.28	0.29	0.25	0.54	0.22	0.54	0.18	0.2	0.2	0.3	0.3	0.2
		SD	0.32	0.26	0.31	0.35	0.48	0.27	0.6	0.6	0.6	0.6	0.5	0.5	0.4
	Youth HHHs	Mean	0.3	0.36	0.33	0.25	0.42	0.26	0.47	0.13	0.15	0.48	0.2	0.3	0.2
		SD	0.27	0.46	0.3	0.36	0.37	0.23	0.41	0.34	0.14	1.01	0.3	0.7	0.3
Non-AGP woredas	All HHHs	Mean	0.29	0.28	0.29	0.28	0.32	0.21	0.29	0.23	0.2	0.2	0.2	0.2	0.2
		SD	0.27	0.4	0.28	0.47	0.29	0.32	0.34	0.73	0.6	0.6	0.3	0.3	0.3
	Female HHHs	Mean	0.28	0.26	0.32	0.22	0.45	0.22	0.48	0.15	0.17	0.27	0.2	0.2	0.2
		SD	0.24	0.24	0.3	0.3	0.39	0.23	0.52	0.51	0.26	0.73	0.6	0.5	0.3
	Male HHHs	Mean	0.34	0.28	0.29	0.26	0.56	0.22	0.55	0.19	0.22	0.22	0.2	0.3	0.2
		SD	0.33	0.28	0.31	0.36	0.49	0.28	0.6	0.62	0.59	0.55	0.5	0.5	0.4
	Mature HHHs	Mean	0.29	0.28	0.29	0.29	0.33	0.22	0.29	0.24	0.21	0.2	0.2	0.2	0.2
		SD	0.28	0.41	0.28	0.48	0.29	0.32	0.34	0.74	0.56	0.38	0.3	0.3	0.3
	Youth HHHs	Mean	0.28	0.26	0.3	0.2	0.25	0.17	0.29	0.09	0.22	0.91	0.3	0.3	0.3
		SD	0.24	0.22	0.22	0.19	0.14	0.13	0.2	0.1	0.32	2.08	0.4	0.3	0.3

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: HHHs and HHs stand respectively for 'Headed Households' and 'Households'.

Crop Yields

Land productivity is usually measured by yield or output per hectare (or other units of land). Yield is also the primary indicator identified with AGP's objective of raising agricultural productivity. This subsection reports on yield measured as reported farm households' crop output per hectare of land cultivated. The discussion is confined to the major cereals (teff, barley, wheat, maize, and sorghum), pulses, oil seeds, root crops, enset, and coffee. Vegetables, fruits, and chat are thus not considered

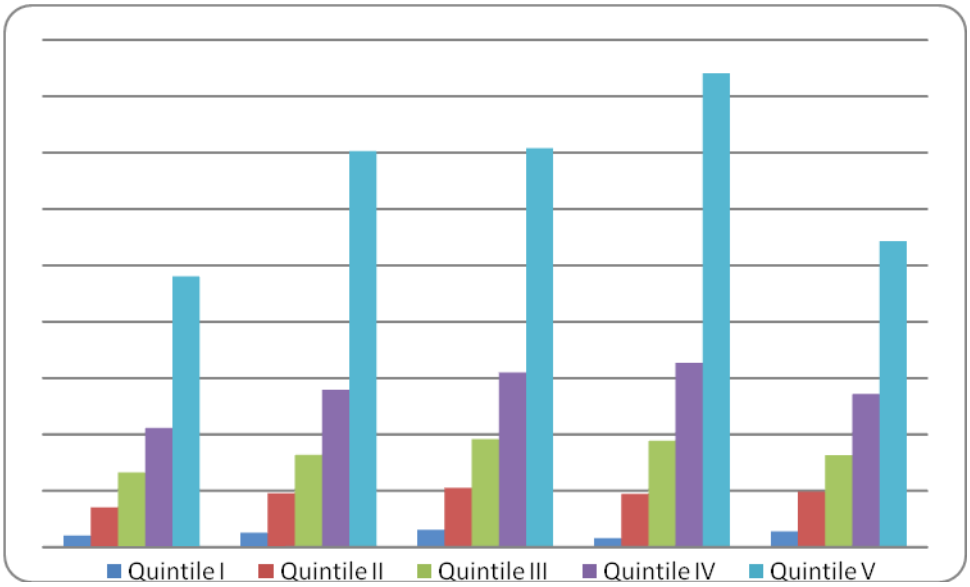
Table 4.3. Average crop yield (quintal/ha)[1], by household head characteristics

	Category	Statistic	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil Seeds	Root Crops	Chat	Enset	Coffee
National	All HHs	Mean	9.4	14.7	14.6	17.2	11.5	10.9	5.1	46.6	130.6	52.3	12.1
		Median	6.7	9.6	10.0	12.0	8.0	6.7	4.0	24.0	4.7	10.0	3.4
		SD	9.0	14.8	14.4	17.4	10.4	14.2	5.8	64.5	677.9	203.3	40.4
	Female HHHs	Mean	8.4	13.4	13.3	15.5	9.9	10.1	5.0	32.9	160.9	58.5	10.7
		Median	6.0	8.4	10.0	11.4	8.0	6.0	4.0	22.4	2.7	8.0	4.1
		SD	8.2	12.5	12.5	14.9	8.5	15.6	4.7	37.4	700.3	233.4	28.9
	Male HHHs	Mean	9.7	15.1	15.0	17.9	12.0	11.1	5.2	51.9	122.1	49.7	12.6
		Median	7.3	10.0	10.0	12.0	8.8	7.0	4.0	25.0	5.6	10.0	3.3
		SD	9.2	15.5	14.9	18.3	10.9	13.8	6.0	71.6	671.2	188.9	43.7
	Mature HHHs	Mean	9.3	14.6	14.4	17.1	11.6	10.8	5.1	45.2	118.3	57.6	13.1
		Median	6.6	9.3	10.0	11.2	8.2	6.4	4.0	24.0	4.0	10.0	3.3
		SD	8.8	14.4	14.0	17.4	10.0	14.9	5.8	61.3	722.4	219.9	43.7
	Youth HHHs	Mean	9.6	14.8	14.8	17.5	11.2	11.0	5.1	49.2	153.7	42.6	10.0
		Median	7.0	9.6	9.6	12.1	8.0	7.0	4.0	24.0	8.0	10.0	3.4
		SD	9.4	15.4	14.9	17.5	10.9	13.0	5.7	70.0	584.3	168.0	32.7

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: [1] Yield is measured as output in quintals per hectare of land (quintal/ha). 'HHHs', 'HHs', and 'SD' stand respectively for 'Headed Households', 'Households', and 'Standard Deviation'.

Table 4.3 summarizes the key features of yield estimates from the AGP baseline data. Among cereals, maize turned out to have the highest yields (17.2 quintals), while teff achieved the lowest (9.4 quintals). These ranking held across household groups and locations. An important feature is the fact that median yield levels were considerably lower than corresponding means. For instance, the mean teff yield of 9.4 quintals is matched with a median of 6.7 quintals. In other words, half of the teff producers could only achieve teff yields of less than 6.7 quintals. The considerable variation in these mean-median differences is corroborated by the high standard deviations associated with crop yields. Moreover, relatively low median and high standard deviation are displayed for enset as well as chat yield levels, to an extent much larger than those of grains.

Figure 4.3. Average cereal yield, by yield quintiles (kg/ha)



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Tables 4.4 and Annex Table B.4.3 indicate that statistically significant differences in mean yields were registered across household types. Female headed households had lower yields of teff, barley, wheat, maize, sorghum, and root crop production. These differences amounted to 1-2 quintals for cereals while it was as high as 19 quintals for root crops. In terms of comparing AGP and non-AGP woredas, statistically significant differences were recorded for sorghum and oil seeds where households in AGP woredas had higher yields compared to households in non-AGP woredas.

Table 4.4. Average crop yield[1], by AGP status and household head characteristics

	Category	Statistic	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil Seeds	Root Crops	Enset	Coffee
AGP woredas	All HHs	Mean	9.8	14.0	15.1	16.0	13.0	12.6	7.0	46.4	34.8	16.8
		Median	8.0	10.0	10.7	10.0	9.3	8.0	4.0	20.0	10.0	3.6
		SD	9.1	14.0	14.5	17.0	12.9	14.1	9.0	66.8	119.1	49.2
	Female HHHs	Mean	9.6	14.5	14.5	14.8	11.5	12.3	6.3	34.5	30.8	18.2
		Median	6.7	10.0	10.0	9.0	8.0	8.0	4.0	20.0	10.0	4.3
		SD	8.8	14.5	13.7	15.6	12.3	14.0	6.9	39.0	71.6	55.4
	Male HHHs	Mean	9.9	13.8	15.3	16.5	13.5	12.7	7.2	50.3	36.5	16.3
		Median	8.0	9.8	10.8	10.1	10.0	8.0	4.0	21.0	10.0	3.3
		SD	9.2	13.7	14.8	17.5	13.1	14.1	9.4	73.2	133.8	46.6
	Mature HHHs	Mean	9.8	13.7	14.8	15.4	12.9	12.1	7.0	46.8	35.6	14.2
		Median	7.5	9.2	10.0	10.0	9.6	8.0	4.0	22.4	10.0	3.6
		SD	9.4	13.9	14.3	16.6	12.5	13.9	9.1	65.8	124.5	40.8
	Youth HHHs	Mean	9.8	14.5	15.8	17.2	13.1	13.7	6.9	45.8	33.3	22.4
		Median	8.0	10.7	12.0	11.1	9.2	8.0	4.0	20.0	10.0	3.6
		SD	8.6	14.0	14.9	17.8	13.5	14.5	8.8	68.5	108.3	63.3
Non-AGP woredas	All HHs	Mean	9.2	14.9	14.4	17.6	10.9	10.4	4.4	46.6	57.9	11.0
		Median	6.0	9.5	9.6	12.0	8.0	6.0	3.8	24.0	9.3	3.3
		SD	8.9	15.0	14.3	17.5	9.1	14.2	3.5	63.9	223.2	37.9
	Female HHHs	Mean	7.9	13.1	12.9	15.7	9.3	9.5	4.5	32.6	67.1	8.8
		Median	6.0	8.0	10.0	12.0	8.0	5.6	4.0	24.0	7.5	4.0
		SD	7.8	11.8	12.0	14.7	6.6	15.9	3.4	37.0	263.4	15.8
	Male HHHs	Mean	9.6	15.5	14.9	18.4	11.4	10.7	4.3	52.3	53.9	11.7
		Median	6.4	10.0	9.6	12.0	8.0	6.4	3.4	26.7	10.0	3.2
		SD	9.2	15.9	15.0	18.5	9.8	13.7	3.5	71.2	203.3	43.0
	Mature HHHs	Mean	9.0	14.9	14.3	17.6	11.1	10.5	4.3	44.8	64.6	12.9
		Median	6.0	9.5	10.0	12.0	8.0	6.0	3.2	24.0	9.3	3.3
		SD	8.5	14.6	14.0	17.6	8.9	15.1	3.4	60.1	242.2	44.4
	Youth HHHs	Mean	9.6	14.8	14.5	17.6	10.4	10.4	4.4	50.2	45.5	7.3
		Median	6.0	9.6	9.3	13.1	8.0	6.4	3.8	24.0	9.6	3.2
		SD	9.7	15.8	14.9	17.4	9.4	12.5	3.6	70.4	182.7	19.8

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: [1] Yield is measured as output in quintals per hectare of land (quintals/ha). HHHs', 'HHs', and 'SD' stand respectively for 'Headed Households', 'Households', and 'Standard Deviation'.

Labour Productivity

Another common partial factor productivity measure is labour productivity. Labour productivity is generally characterized in terms of a ratio of the amount of output produced to the associated amount of labour used. It is clear that both output and labour can be measured in a variety of physical or value units, thereby leading to different indicators of labour productivity. Output per adult equivalent labour (or work) day is one such measure and is equal

to the average output produced per each adult equivalent work day that household members spent during a given production cycle.

In the present case, labour productivity is measured as the ratio of output in kilograms to family labour used in adult equivalent labour days. An adult equivalent labour day equals the amount of labour an adult male spent during a working day. Adult equivalent labour days were obtained as a weighted sum of labour days reported for adult males (weight=1), adult females (weight=0.84), and children below the age of 15 (weight=0.48). The weights are derived as averages across activities for each group estimates reported in ILCA (1990).[11]

AGP baseline survey respondents were asked to report the number of days that members of their household spent on each plot by crop and specific activity. The resulting person days were converted into adult equivalent labour days and, combined with corresponding output level estimates, were used to compute labour productivity as defined above. Table 4.5 summarizes the estimates for the 2010/2011 Meher season. The figures represent estimated output (in kg) produced by family labour spent during an adult equivalent labour day. For all farm households, mean levels of labour productivity measured range from 9.7 kg for sorghum to 14 kg for barley. Large standard deviations suggest significant differences among households — a one standard deviation increase meant a doubling of labour productivity for almost all crops.

Labour productivity was similar for male and female headed households, with only a labour productivity difference for oilseeds — female headed households produced 1 kg less oilseeds per labour day than male headed households — and for maize — female headed households produced 1.5 kg more maize per labour day than male headed households. However, young headed households had slightly higher labour productivity levels compared to mature headed households for almost all crops, with the highest difference recorded for teff (2.2 kg). Similarly, AGP woredas had slightly higher labour productivity levels than non-AGP woredas, with the highest difference shown for sorghum (2.8kg).

[11] It is important to note as a caveat that the labour days reported by respondents were not necessarily equal to full working days in every case. It is also unlikely that these days were identical across crops and/or activities. Reasonable adjustments for these features were not possible due to lack of the requisite data.

Table 4.5. Output per adult equivalent labour-day[1], by AGP status and household head characteristics

Group		Statistic	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil Seeds	Root Crops	Coffee	Enset
National	All HHs	Mean	10.0	14.0	12.3	10.7	9.7	13.8	11.8	13.7	10.2	10.8
		Median	6.2	10.0	9.1	6.7	6.1	9.3	7.8	10.5	6.3	6.7
		SD	10.0	12.1	11.0	10.6	10.3	12.5	11.9	11.9	11.0	11.4
	Female HHHs	Mean	9.8	13.9	12.1	11.8	10.0	13.4	11.0	13.5	10.6	10.6
		Median	6.4	11.8	8.8	8.2	6.5	8.7	6.4	10.9	6.8	6.7
		SD	9.1	11.0	11.5	10.9	11.0	12.5	12.7	12.6	11.2	10.7
	Male HHHs	Mean	10.1	14.1	12.4	10.3	9.6	13.9	12.0	13.8	10.1	10.9
		Median	6.2	9.8	9.3	6.5	6.0	9.5	8.5	10.4	5.9	6.6
		SD	10.3	12.4	10.9	10.5	10.1	12.5	11.8	11.7	10.9	11.7
	Mature HHHs	Mean	9.2	13.5	11.8	10.1	9.2	13.4	11.3	13.3	10.1	10.2
		Median	5.5	9.3	8.6	6.1	5.5	9.1	6.8	10.2	6.2	6.1
		SD	9.7	12.2	10.6	10.1	10.3	12.2	12.5	11.8	10.9	11.0
	Youth HHHs	Mean	11.4	14.9	13.2	11.8	10.7	14.5	12.6	14.5	10.5	11.9
		Median	8.2	12.5	9.9	7.2	6.9	9.8	9.5	11.3	6.3	7.7
		SD	10.5	11.7	11.6	11.4	10.3	13.0	11.0	12.1	11.0	12.1
	AGP woredas	Mean	11.2	14.1	12.6	11.9	11.8	15.3	13.0	13.4	10.7	11.3
		Median	7.4	10.4	9.4	7.7	7.8	11.6	9.3	9.9	5.7	7.5
		SD	10.7	12.4	11.5	11.5	11.4	12.3	11.7	12.6	11.8	11.6
	Non-AGP woredas	Mean	9.5	14.0	12.2	10.4	9.0	13.4	11.4	13.8	10.1	10.7
		Median	5.8	10.0	9.0	6.4	5.6	8.9	7.4	10.9	6.3	6.3
		SD	9.7	12.0	10.9	10.3	9.8	12.5	12.0	11.7	10.8	11.3

Source: Authors' compilation, AGP base line survey, 2011.
Notes: [1]Labour productivity is measured as the ratio of output in kilograms to family labour used in adult equivalent labour days; Adult equivalent labour days are obtained as a weighted sum of labour days reported for adult males (weight=1), adult females (weight=0.84), and children below the age of 15 (weight =0.48); The weights are derived as averages across activities for each group estimates reported by ILCA (1990). HHHs', 'HHs', and 'SD' stand respectively for 'Headed Households', 'Households', and 'Standard Deviation'.

4.2. Productivity in the Livestock Sub-sector

The livestock sub-sector is an important element of mixed farming practiced in most of the study area. It provides draft power to crop production as well as additional food and income. Measuring productivity in this sub-sector is thus valuable.

Livestock productivity indices are intrinsically more complex with corresponding data challenges. One possibility, akin to the measurement of crop productivity, is to link volume of output of, say milk, to the amount of grazing land. However, livestock are unlikely to have exclusive use of specific private plots as is usually the case with crops. In addition, other sources

of forage are available to the animals including common grazing land, crop residues, and fallow plots (James and Carles, 1996). An alternative is to use volume of output with the number of animals producing it. In fact, from all livestock productivity measures, it was possible to compute only cow milk yields using AGP baseline data.

As a prelude, livestock ownership patterns and grazing land sizes are considered next.

4.3. Livestock Ownership

Table 4.6 summarizes the information on livestock ownership collected by the AGP baseline. On average, cattle-owning farm households in the study area owned 3.6 heads of cattle. Cows (female cattle) represented about half of the cattle owned by these households. Male headed households, mature headed households, and households in AGP woredas owned more cattle than their counterparts. A similar pattern is observed in cow ownership with one significant exception — on average, female headed households had more cows than male headed ones.

Table 4.6. Livestock ownership, by AGP status and household characteristics

Group	Category	Statistic	Cattle*	Shoats	Camel	Cows	Proportion of households who own one or more cows (%)
			No.	No.	No.	No.	
National	All Households	Mean	3.56	4.03	0.03	1.83	28.1
		SD	3.70	4.85	0.27	1.38	
	Female headed Households	Mean	2.94	3.64	0.01	1.65	34.0
		SD	3.12	4.16	0.12	1.08	
	Male headed Households	Mean	3.79	4.18	0.04	1.89	26.4
		SD	3.86	5.07	0.31	1.46	
	Mature headed Households	Mean	3.88	4.35	0.03	1.94	25.8
		SD	3.97	5.23	0.27	1.43	
	Youth headed Households	Mean	3.03	3.47	0.03	1.62	33.0
		SD	3.12	4.03	0.27	1.23	
AGP woredas		Mean	4.04	3.58	0.09	1.91	24.7
		SD	4.25	4.50	0.49	1.46	
Non-AGP woredas		Mean	3.41	4.17	0.01	1.80	29.3
		SD	3.49	4.94	0.14	1.35	

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: * 'Cattle' excludes calves. 'Shoats', 'No.', and 'SD' stand respectively for 'Sheep and Goats', 'Number', and 'Standard Deviation'.

The average picture depicted in the previous paragraph hides considerable differences across households. Only 28 percent of the households reported owning one cow or more (Table 4.6).

There are thus a lot of households with no cows — a fact supported by the large standard deviations computed. Interestingly, a larger fraction (34 percent) of female headed households reported cow ownership than those headed by men (26 percent).

Grazing Land

Availability of grazing land is another major determinant of not only the number of animals owned but also the corresponding productivity. Farm households in the study area identified only 6 percent of their landholdings as grazing area (Table 4.7). On average, female headed households allocated a bit more of their holdings (7.2 percent) to grazing than male headed households (5.8 percent).

Table 4.7. Grazing land as a share of landholdings, by household categories and AGP status

Category	Proportion of grazing land (%)
All Households	6.20
Female headed Households	7.24
Male headed Households	5.83
Mature headed Households	6.60
Youth headed Households	5.35
AGP woredas	5.46
Non-AGP woredas	6.49

Source: Authors' calculations using data from the AGP Baseline Survey 2011

Cow Milk Yield

In part reflecting the size of cow ownership, availability of grazing resources, and the genetic make-up of the cow population, cow milk yields reported were small. The average level was about a litre per cow per day and displays very little variation across household groups or location (Table 4.8). Nevertheless, there is considerable heterogeneity (relative to the average) in cow milk yields within each group.

Table 4.8. Milk yield in litre per cow per day, by AGP status and household heads' characteristics

Group	Category	Milk Yield (litres/cow/day)	
		Mean	SD
National	**All Households**	0.95	0.70
	Female headed Households	1.04	0.75
	Male headed Households	0.92	0.68
	Mature headed Households	0.93	0.72
	Youth headed Households	1.00	0.67
	AGP woredas	0.93	0.73
	Non-AGP woredas	0.96	0.69

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'SD' stands for 'Standard Deviation'.

4.4. Summary

This chapter focuses on aspects of crop and livestock productivity of households in the study area. Accordingly, summaries of the findings on output levels, yields, and labour productivity estimates for both crop production and livestock production are provided. Due emphasis is attached to yield of major crop classifications. In order to capture the output and yield estimates, crops are categorized into fifteen groups — Teff, Barley, Wheat, Maize, Sorghum, Other Cereals, (which at some points are discussed in group as cereals), Pulses, Oilseeds, Vegetables, Fruits, Root Crops, Coffee, Chat, Enset, Others.

In terms of area cultivated, the first striking feature is the predominance of cereals which accounted for 66 percent of total acreage. Among cereals, teff (16.1 percent) recorded the largest share of cultivated area, followed by maize (15.2 percent), and wheat (11.5 percent). Regarding the acreage shares across AGP status groupings, on average, AGP woredas had larger acreage shares going to teff, sorghum, and oil seeds. In contrast, non-AGP woredas recorded greater shares for barley, pulses, and fruits. Although maize and wheat respectively took second and third places in terms of acreage, they ranked first and second in output with a share of 30 percent and 17 percent respectively. Teff took the third spot with a share of 13 percent.

Estimates of output at the household level reveal that on average these outputs were not very high during the Meher season covered. For the study area as a whole, they range from 1.3 quintals for coffee through to 5.8 quintals for maize**.** The median, on the other hand, is 2 quintals, implying that half of these households produced less than 2 quintals. The comparison between AGP groups show that, among the crops considered, average household output was higher in AGP woredas relative to non-AGP woredas for teff, wheat, maize, sorghum, pulses, oil seeds, and chat, while average output was greater in non-AGP woredas for the other crops. Moreover, the only statistically significant differences between households in AGP and non-AGP woredas were observed for sorghum, pulses, and oilseeds. To complement on the perspective provided by average output levels, average plot sizes are also computed. The findings indicate that on average a household operated plots measuring a third of a hectare. Although the land sizes allocated to sorghum and oilseeds were the two highest, there was no significant difference on average plot size allotted to annual crops. When plot sizes are viewed across gender of household heads, the findings confirm that male headed and mature headed households had slightly bigger plots compared to those of their respective counterparts.

Average yields for each crop classification are subsequently considered. Among cereals, maize

turned out to have the highest yields (17.2 quintals per hectare), while teff had the lowest (9.4 quintals per hectare). This ranking held across household groups and locations. A striking difference has been observed across mean and median estimates, however. For instance, the mean teff yield of 9.4 quintals per hectare is matched with a median of 6.7 quintals per hectare. In other words, half of the teff producers could only achieve teff yields of less than 6.7 quintals per hectare. Statistically significant differences in mean yields were registered across household types. Female headed households achieved lower yields in teff, barley, maize, and root crop production. These differences amounted to 1-2 quintals per hectare. However, there is no significant difference recorded between AGP and non-AGP woredas.

Labour productivity is generally characterized in terms of a ratio of the amount of output produced to the associated amount of labour used. To do so, output per unit of labour (in adult equivalent labour (or work day) is estimated. For all farm households, mean levels of labour productivity measured ranged from 9.7 kg for sorghum to 14 kg for barley. Labour productivity was similar for male and female headed households, with only a labour productivity difference for oilseeds — female headed households produced 1 kg less oilseeds per labour day than male headed households — and for maize — female headed households produced 1.5 kg more maize per labour day than male headed households. However, young headed households had slightly higher labour productivity levels compared to mature headed households for almost all crops, with the highest difference recorded for teff (2.2 kg). Similarly, AGP woredas had slightly higher labour productivity levels than non-AGP woredas, with the highest difference shown for sorghum (2.8kg).

Livestock productivity indices are intrinsically more complex with corresponding data challenges. But some indicative measures are computed. On average, cattle-owning farm households in the study area owned 3.6 heads of cattle. Male headed households, mature headed households, and households in AGP woredas owned more cattle than their counterparts. Availability of grazing land is another major determinant of not only the number of animals owned but also the corresponding productivity. Farm households in the study area identified only 6 percent of their landholdings as grazing area. On average, female headed households allocated a bit more of their holdings (7.2 percent) to grazing than male headed households (5.8 percent). The average milk yield was about a litre per cow per day and displays very little variation across household groups or location. Nevertheless, there is considerable heterogeneity (relative to the average) in cow milk yields within each group.

Chapter 5: Input use in crop production

In this chapter we describe the types of inputs used in crop production along with the corresponding magnitudes and intensity of applications. We start with land. We describe the number, characteristics, and size of plots cultivated as well as average acreage by households. Second, we provide descriptive statistics for labour. Application rates of modern inputs including fertilizer, improved seeds, soil conservation methods, and extension services will be discussed in the third subsection. The subsection will also discuss fertilizer application trends in the recent past and problems associated with adoption and/or application rates of fertilizer and other modern inputs. The final section summarizes.

5.1. Land

Land Use

In this subsection we first describe the number, size, and other characteristics of plots cultivated during the 2010/11 Meher season. Then we consider household and crop specific average cultivated area.

Number and Characteristics of Plots Cultivated

A total of 45.2 million plots of varies sizes were cultivated with temporary (annual) and permanent (perennial) crops during the Meher season within which the survey was conducted. Out of this total, 79.2 percent were fully and 2.3 percent were partially cultivated with temporary crops. About 18.5 percent were under permanent crops.

On average, a household in the study area operated 5.1 plots, the average size of a plot being 0.25 hectares (Tables 5.1-5.2). Slightly more than half of the households operated 4 or less plots. The most common number of plots was 3; 16 percent of all households reported to cultivate 3 plots. Overall, male headed households farmed larger total cultivated area (1.44 ha) and had slightly higher number of plots (5) than female headed households (1.06 ha and 4 plots, respectively) (Table 5.1 and 5.3). While 60.9 percent of female headed households cultivated 4 or fewer plots, the corresponding figure for male headed households was only 43.6 percent.

Table 5.1. Average number of plots operated, by household categories, AGP status, and region (100% = all households in that category)

Groups	Category	Households with the given number of plots (%)									Total number of plots operated	
		1	2	3	4	5	6	7	8	9 and above	Mean	SD
National	All HHs	6.61	11.41	15.82	14.89	13.80	11.1	8.99	5.92	11.48	5.09	2.94
	Female HHHs	11.43	16.98	17.98	14.53	13.21	8.48	7.51	4.06	5.82	4.22	2.56
	Male HHHs	4.56	9.05	14.9	15.04	14.05	12.21	9.62	6.71	13.86	5.45	3.01
	Mature HHHs	5.84	10.06	15.46	15.65	14.32	10.68	8.54	6.22	13.24	5.28	3.06
	Youth HHHs	7.89	13.68	16.42	13.61	12.92	11.80	9.76	5.43	8.50	4.76	2.69
AGP woredas	All HHs	6.60	9.87	15.10	15.14	15.09	10.46	8.18	5.91	13.64	5.23	2.97
	Female HHHs	12.64	15.71	17.09	14.76	15.18	7.62	6.85	2.81	7.34	4.24	2.61
	Male HHHs	4.09	7.44	14.25	15.30	15.05	11.65	8.74	7.20	16.3	5.65	3.01
	Mature HHHs	5.79	9.47	14.95	14.70	14.87	9.64	9.08	6.31	15.19	5.42	3.10
	Youth HHHs	8.03	10.58	15.33	15.91	15.47	11.90	6.61	5.19	10.98	4.90	2.70
Non-AGP woredas	All HHs	6.61	11.89	16.04	14.81	13.40	11.3	9.25	5.93	10.79	5.04	2.93
	Female HHHs	11.07	17.36	18.25	14.46	12.61	8.74	7.72	4.44	5.35	4.21	2.54
	Male HHHs	4.71	9.55	15.10	14.96	13.73	12.39	9.90	6.56	13.11	5.40	3.01
	Mature HHHs	5.86	10.25	15.62	15.94	14.14	11.01	8.37	6.19	12.62	5.23	3.05
	Youth HHHs	7.85	14.6	16.75	12.93	12.17	11.77	10.70	5.50	7.73	4.72	2.68

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' and 'HHs' stand respectively for 'Headed Households' and 'Households'. The proportions in Column 3–11 do not exactly sum up to slightly less than 100 because of rounding.

A larger proportion of households with young heads operated fewer plots relative to those with mature heads. Moreover, average plot sizes cultivated by households with young heads were relatively smaller. About 52 and 47 percent of households headed with young and mature heads operated 4 or fewer plots, respectively.

The average number of plots cultivated by households in non-AGP woredas is almost the same as the average in AGP woredas. However, AGP households cultivate slightly larger plots, resulting in slightly larger average cultivated area in AGP woredas. The pattern and difference in the number of plots operated by young and mature observed in the aggregated sample also holds in both AGP and non-AGP woredas. Similarly, as observed in the case of all households, male headed ones cultivate more plots in both AGP and non-AGP woredas. However, the difference in the average number of plots cultivated by male and female headed households is larger in AGP woredas.

According to respondents, a plot on average was located at about 15 minutes walking distance from farmers' residences. Plots cultivated by households headed by male and young are farther away from their homes relative to those operated by female and mature headed households. The last observation also holds in both AGP and non-AGP woredas. Nevertheless, differences in the distance of plots from the homestead across categories were not large (Table 5.2).

Table 5.2. Average household plot area and characteristics of plots, by household categories and AGP status

Group	Category	Average plot size (ha)	Plot distance from homestead (minutes)	Soil quality (%)			Plot slope (%)	
				Fertile	Moderately fertile	Poorly fertile	Flat	Steep
National	All HHs	0.26	15.3	57.6	32.2	10.2	68.0	29.0
	Female HHHs	0.25	12.9	57.1	32.4	10.5	68.3	29.9
	Male HHHS	0.26	16.0	59.1	31.5	9.4	69.6	29.0
	Mature HHHs	0.27	14.8	57.6	32.7	9.6	68.3	30.1
	Youth HHHs	0.25	16.1	57.6	31.9	10.5	68.8	29.5
AGP woredas	All HHs	0.28	16.0	59.9	31.9	8.1	66.8	31.4
	Female HHHs	0.26	14.7	59.2	32.5	8.3	73.7	25.1
	Male HHHS	0.29	16.4	62.2	30.2	7.7	76.7	22.1
	Mature HHHs	0.29	15.3	60.3	31.9	7.9	74.2	24.6
	Youth HHHs	0.27	17.5	59.8	32.0	8.3	74.5	24.3
Non-AGP woredas	All HHs	0.25	15.0	56.9	32.3	10.9	74.4	24.4
	Female HHHs	0.25	12.3	56.5	32.4	11.2	66.6	31.4
	Male HHHS	0.26	15.9	58.2	31.9	9.9	67.4	31.1
	Mature HHHs	0.26	14.7	56.8	33.0	10.0	66.5	31.7
	Youth HHHs	0.24	15.7	56.9	31.9	11.2	66.9	31.2

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' and 'HHs' stand respectively for 'Headed Household' and 'Households'.

Farmers were asked to characterize their plots as fertile, moderately fertile, and poorly fertile. About 58 percent of the plots cultivated during Meher 2010/11 were categorized as fertile, 32 percent moderately fertile, and the remaining 10 percent poorly fertile (Table 5.2). Although the proportions marginally vary, the rank order of the three fertility classes remains the same across gender, ages, and woreda categories. Farmers were also asked whether they consider their plots as flat, which is easy to cultivate, steep, or very steep. About 68 percent of the plots were flat, 29 percent steep, and the remaining 3 percent were very steep[12]. Again, the relative share of the three qualitative slope measures remains more or less the same across the different categories and woredas with only slight differences in the proportions. Among the differences worth mentioning are: a relatively larger proportion of plots in non-AGP woredas are flat and a slightly larger proportion in AGP woredas are steep.

[12] In Table 5.2, the share of the 'very steep' category can be obtained as 100 less the sum of the percentage share of the 'flat' and 'steep' categories.

Area Cultivated

On average, households used 1.32 hectares of land to grow temporary and permanent crops during the 2010/11 Meher season in the study area, with male and mature headed households cultivating larger area than their counterparts (Table 5.3).[13] The mean area cultivated in non-AGP woredas was slightly smaller relative to those in AGP woredas. However, there is a wide variation in cultivated area across households with male and female heads in non-AGP and AGP woredas. While an average male headed household in non-AGP woredas cultivated 30 percent more land relative to those with female heads, this number was 51 percent in AGP woredas. The average area cultivated by female headed households in non-AGP woredas is the smallest among male and female headed households in the two woreda categories. Mature headed households cultivated 19 percent larger area relative to the average by households with young heads. This pattern is somehow similar among households in both non-AGP and AGP woredas.

Table 5.3. Average household cultivated area (ha), by household categories, AGP status, and region

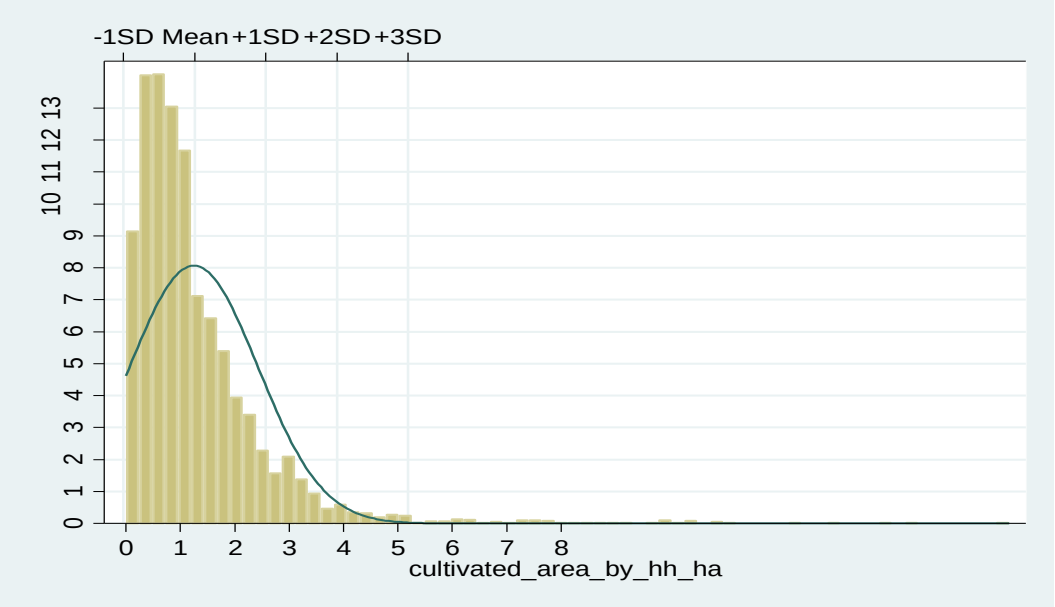
Groups	Category	All Sample	Without Western and North western Tigray
National	**All HHs**	1.32	1.31
	Male HHHs	1.44	1.42
	Female- HHHs	1.06	1.05
	Mature HHHs	1.41	1.39
	Youth HHHs	1.18	1.17
AGP woredas	**All HHs**	1.47	1.42
	Male HHHs	1.63	1.58
	Female- HHHs	1.08	1.06
	Mature HHHs	1.55	1.51
	Youth HHHs	1.33	1.29
Non-AGP woredas	**All HHs**	1.28	1.27
	Male HHHs	1.37	1.37
	Female HHHs	1.05	1.05
	Mature HHHs	1.36	1.36
	Youth HHHs	1.13	1.14
Regions	**Tigray**	1.66	1.13
	Amhara	1.47	1.47
	Oromiya	1.39	1.39
	SNNP	1.01	1.01

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' and 'HHs' stand respectively for 'Headed Households' and 'Households'.

[13] The last column in Table 5.3 is added to clarify why Tigray came out as the region with the highest mean area cultivated among the four regions. The table shows that the inclusion of the relatively land abundant Western Tigray and North Western Tigray zones explains the outcome. Given the relative abundance of land, households in these zones cultivate some of the largest plots of land in the country. Excluding households in these zones reduces the area cultivated by an average household in the aggregated sample to 1.13 hectares. This is a reduction by only 1.1 percent from the average including those zones. However, average cultivated area in Tigray region without the Western and North Western Tifray zones is 1.13 hectares, which is about 43 percent lower than the average computed for households in Tirgray with these zones included (1.66 ha) — an inclusion which made the region with the highest mean area cultivated among the four regions.

The distribution of cultivated acreage provides additional information. Figure 5.1 below summarizes acreage and percentiles of households with corresponding cultivated area. The average area of 1.32 hectares hides the important fact that a large majority of the households cultivate very small areas. In the aggregated sample, 50 percent of the households cultivated less than 0.94 hectares. More revealing, however, is the difference in average area that the upper 50 percent of households are cultivating compared to the lower half of households: average cultivated area is 2.2 hectares for the former compared to 0.48 ha for the latter; or the upper 50 percent of households are cultivating an area that is 4.6 times larger than that of the lower half of households.. Similarly, about 5 percent of the households cultivate about one-eighth of a hectare or smaller and about 10 percent cultivate one-fifth of a hectare or smaller. Only 42 percent of the households cultivate an area that is equal to or larger than the average area of 1.14 hectares.

Figure 5.1. Distribution of household's cultivated area



Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'SD', 'hh' and 'ha' represent 'Standard Deviation', 'Household', and 'hectare', respectively.

In Table 5.4 we summarize average area used to cultivate teff, barley, wheat, maize, and sorghum, pulses, oil seeds, vegetables, root crops, fruits, enset, chat, and coffee. Area allocated to grow cereals accounted for the largest proportion of total area. In addition, for each of the five cereals more land was used than for most other crop categories. Households that grow sorghum allocated the largest area to sorghum relative to all other crops or cop categories. Oilseeds and teff share the second place in crop acreage. . Wheat, maize, and barely, in that order, get the next three rankings in crop acreage. The average cultivated area under each crop/crop category varied little ranging from 0.49 hectares in sorghum to 0.20 hectares in chat.

The importance of crops in area for male headed households is mostly similar to that for all households. In contrast, the area allocated by households with female heads differs more. Unlike an average household in the aggregated sample, households with female heads allocated the largest area for fruits, oilseeds, and sorghum respectively while barley and teff are equally important at 4th place. Given that households with male heads on average cultivate larger area they allocate more land for most crops. The exceptions to this are barley, enset, and chat, in which the averages for both genders were equal, and root crops and fruits in which households with female heads allocated 39 and 69 percent more land, respectively. For households with mature heads the importance of the crops in terms of area was similar to that for an average household with the exception that that sorghum and teff share the first place in acreage, and that coffee is more important than fruits. For households with young heads, fruits are more important than teff; as such, fruits are the third most important crop in terms of area cultivated. Again, given the larger average area households with mature heads cultivate they allocate more land for teff, barley, wheat, maize, pulses, vegetables, root crops, enset, chat and coffee. However, these differences were small when comparing them with corresponding differences for households with male and female heads.

Table 5.4. Average area cultivated by crop, by household categories, AGP status and crop classification

Group	Category	Statistic	Teff	Barely	Wheat	Maize	Sorghum	Pulses	Oil Seeds	Vege tables	Root Crops	Fruit Crops	Enset	Chat	Coffee
National	All HHs	Mean	0.46	0.38	0.41	0.39	0.49	0.34	0.46	0.23	0.25	0.34	0.26	0.20	0.33
		Rank	2	5	3	4	1	6	2	10	9	6	8	11	7
		SD	0.48	0.51	0.47	0.58	0.49	0.48	0.56	0.73	0.63	0.82	0.39	0.40	0.53
	Female HHHs	Mean	0.38	0.38	0.37	0.32	0.40	0.31	0.44	0.18	0.32	0.49	0.26	0.21	0.28
		SD	0.31	0.46	0.35	0.46	0.40	0.53	0.42	0.56	0.80	1.15	0.39	0.40	0.42
	Male HHHs	Mean	0.49	0.38	0.43	0.42	0.53	0.35	0.47	0.26	0.23	0.29	0.26	0.20	0.35
		SD	0.52	0.52	0.50	0.63	0.52	0.46	0.59	0.78	0.55	0.65	0.40	0.40	0.56
	Mature HHHs	Mean	0.49	0.39	0.43	0.41	0.49	0.36	0.44	0.25	0.27	0.30	0.27	0.21	0.35
		SD	0.52	0.46	0.51	0.62	0.49	0.50	0.51	0.79	0.68	0.67	0.40	0.42	0.58
	Youth-HHHs	Mean	0.41	0.36	0.38	0.35	0.50	0.30	0.49	0.20	0.23	0.43	0.25	0.19	0.30
		SD	0.39	0.58	0.38	0.51	0.50	0.45	0.63	0.59	0.53	1.06	0.38	0.34	0.39
AGP woredas	All HHs	Mean	0.52	0.34	0.43	0.34	0.68	0.37	0.69	0.20	0.25	0.33	0.25	0.29	0.35
		Ranks	3	7	4	7	2	5	1	11	10	8	10	9	6
		SD	0.56	0.34	0.49	0.47	0.64	0.48	0.77	0.63	0.63	0.95	0.41	0.58	0.77
	Female HHHs	Mean	0.43	0.32	0.42	0.27	0.53	0.34	0.59	0.17	0.19	0.36	0.24	0.28	0.28
		SD	0.39	0.28	0.42	0.39	0.45	0.43	0.64	0.55	0.33	1.05	0.37	0.61	0.62
	Male HHHs	Mean	0.55	0.34	0.43	0.36	0.73	0.38	0.72	0.21	0.27	0.32	0.26	0.29	0.38
		SD	0.60	0.36	0.51	0.50	0.68	0.50	0.80	0.66	0.70	0.91	0.42	0.57	0.82
	Mature HHHs	Mean	0.55	0.35	0.45	0.35	0.70	0.40	0.69	0.23	0.24	0.32	0.26	0.29	0.38
		SD	0.61	0.35	0.52	0.51	0.66	0.51	0.80	0.75	0.62	0.94	0.42	0.61	0.86
	Youth HHHs	Mean	0.46	0.31	0.39	0.32	0.66	0.32	0.70	0.15	0.28	0.36	0.24	0.28	0.30
		SD	0.45	0.32	0.43	0.39	0.61	0.43	0.72	0.36	0.65	0.95	0.40	0.52	0.53
Non-AGP woredas	All HHs	Mean	0.44	0.39	0.41	0.41	0.42	0.33	0.37	0.25	0.25	0.35	0.26	0.17	0.33
		SD	0.44	0.54	0.46	0.62	0.41	0.48	0.43	0.77	0.63	0.78	0.39	0.29	0.46
	Female HHHs	Mean	0.36	0.39	0.35	0.34	0.36	0.30	0.39	0.18	0.35	0.53	0.26	0.19	0.28
		SD	0.26	0.49	0.32	0.48	0.37	0.55	0.29	0.57	0.87	1.18	0.40	0.26	0.36
	Male HHHs	Mean	0.46	0.39	0.42	0.44	0.45	0.34	0.37	0.28	0.22	0.28	0.26	0.16	0.35
		SD	0.48	0.56	0.50	0.66	0.42	0.45	0.46	0.85	0.50	0.53	0.39	0.30	0.49
	Mature HHHs	Mean	0.46	0.40	0.42	0.44	0.42	0.35	0.34	0.26	0.28	0.29	0.27	0.18	0.34
		SD	0.47	0.49	0.51	0.66	0.40	0.49	0.29	0.81	0.69	0.55	0.40	0.32	0.51
	Youth HHHs	Mean	0.39	0.37	0.38	0.36	0.43	0.30	0.42	0.23	0.22	0.46	0.25	0.14	0.30
		SD	0.36	0.62	0.36	0.54	0.43	0.46	0.58	0.70	0.48	1.10	0.38	0.21	0.36

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' and 'HHs' stands respectively for 'Headed Households' and 'Households'. 'SD' stands for 'Standard Deviation'.

The ranking of crop importance in terms of area cultivated for households in AGP woredas shows several differences compared the ranking for the households in the aggregated sample. A remarkable difference is that households in AGP woredas allocated the biggest share of land to oil seeds and a greater share of land to coffee than to maize and barley — maize and barley dropped as such to the seventh ranking, compared to the 4th and 5th place in the aggregated sample. In addition, households in AGP woredas also allocated a larger share of land to chat cultivation; in fact, in terms of allocated land, chat was more important than enset, root crops

and vegetables. In terms of average cultivated area for each crop, households in AGP woredas allocated 70, 62, 86, 18, and 6 percent more area to grow chat, sorghum, oilseeds, teff, and coffee, respectively, compared to households in non-AGP woredas. By contrast households in non-AGP woredas allocated 15 percent larger area for barley, and 21, 25, 6, and 4 percent larger area to grow maize, vegetables, fruits, and enset, respectively. There was no difference in root crops area.

Land Tenure and Registration

The survey included questions regarding sources of cultivated plots and whether or not the plot was registered. The findings are summarized in Table 5.5.

The large majority of the plots that households cultivated in the Meher 2010/11 season were inherited from relatives (48 percent). This is 40 percent higher than the proportion of plots that were directly allocated by the government to their current tenants, which is 35 percent. The proportion of plots owned by other households but cultivated through some arrangement is about 16 percent of the total. This is largely composed of share-cropped (8 percent) and rented-in (6 percent) land. It is interesting to note that over 0.6 million plots are borrowed/rented for free. The vast majority of the plots (82 percent) that were cultivated by the households were registered. By registering a plot with the local authority households get certificates acknowledging their user rights.

Households with female heads acquired a larger proportion of plots directly from the government (43 percent) than households with male heads (31 percent). Given the fact that farmers associations are required to allocate land without gender discrimination the difference in the proportion allocated to households with female and male heads is considerably wide. For both male and female headed households the proportion of plots inherited was 48 percent. A slightly larger proportion of cultivated by female headed households are registered.

The proportion of plots that are allocated by the government increases with age, indicating that younger household heads have to find land through other means than government allocation. Moreover, the proportion of plots households acquired through inheritance declines with the age of the head. Thus, for households with younger heads inheritance is a more important means of land acquisition. The ratio of proportion inherited to proportion allocated is roughly 3.1 for households with young heads. It is also interesting to note that households with younger heads use more plots from others through the means of renting and share-cropping relative to households with older heads. Mature headed households have a larger proportion of plots registered than

young headed households.

Table 5.5. Sources of user rights of cultivated land (%)

Groups	Category	Own plots		Others' plots				Proportion registered
		Allocated	Inherited	Mortgaged	Rented-in	Share-cropped	Borrowed free	
National	All HHs	34.2	47.9	0.3	4.2	6.3	1.9	81.9
	Female HHHs	42.7	48.2	0.1	1.6	1.8	1.2	82.3
	Male HHHs	31.3	47.9	0.3	5.0	7.7	2.1	81.8
	Mature HHHs	43.8	41.3	0.3	3.0	4.0	2.3	85.4
	Youth HHHs	14.0	61.9	0.1	6.7	11.1	0.9	74.5
Total AGP Sample	All HHs	38.2	43.2	0.6	5.2	8.0	0.6	80.9
	Female HHHs	51.1	40.2	0.4	1.7	1.8	0.6	82.0
	Male HHHs	34.1	44.2	0.7	6.3	10.0	0.6	82.2
	Mature HHHs	49.0	37.9	0.7	3.7	4.8	0.7	85.1
	Youth HHHs	14.4	55.0	0.5	8.4	15.2	0.4	76.2
Total Non-AGP Sample	All HHs	32.9	49.5	0.2	3.8	5.7	2.3	82.2
	Female HHHs	40.1	50.7	0.0	1.6	1.8	1.4	83.0
	Male HHHs	30.5	49.1	0.2	4.6	7.0	2.6	80.3
	Mature HHHs	42.1	42.4	0.2	2.7	3.7	2.9	86.4
	Youth HHHs	13.8	64.0	0.0	6.1	9.8	1.1	69.0

Source: Authors' calculations using data from the AGP Baseline Survey 2011
Notes: 'HHHs' and 'HHs' stand respectively for 'Headed Households' and 'Households'. Row percentages are not equal to 100% as some means of acquiring land are not reported.

Compared to households in non-AGP woredas, households in AGP woredas had a larger proportion of directly allocated plots and a smaller proportion of inherited plots. Considering the remaining source, the proportions of rented-in and share-cropped plots were about 39 percent larger in AGP households, while the proportion of freely rented plots was 3.8 times larger in non-AGP households.

5.2. Labour use

The AGP baseline survey collected data on the number of days (as opposed to hours) spent on performing different tasks of production. As such, any crop production activity of any length is considered as a work day. We converted the total number of days that each household member of a specific age and gender contributed into adult male equivalents. We summarize the estimated average labour use per hectare in Table 5.6. It is important to note as a caveat that the labour days reported by respondents were not necessarily equal to full working days in every case. It is also unlikely that these days were identical across crops and/or activities. Reasonable adjustments for these features were not possible due to lack of the requisite data. Note also that, although the labour days are expressed on a per hectare basis only by far, the largest fraction of crop-specific cultivated area is much less than a hectare.

Labour days used to grow sorghum are more than twice the one for chat, which has the second largest number of days. While sorghum requires more care during fruition to harvest, this large number may indicate labour use that grows proportionally faster than area. Among cereals, in the number of adult equivalent work days, teff was second from last, next to wheat, while considerably more labour was used per hectare of barley and maize grown. The smallest number of family labour days was used to cultivate oilseeds.

The importance of crops in terms of number of family labour used by female headed households is different from the aggregated sample for all crops except for oilseeds and enset. Male headed households perform relatively similar with an average household. However, the number of median work days used to grow each crop by female and male headed households differs from the aggregated median. The importance of crops in terms of the number of work days is very different between households with mature heads and households with young heads. The importance of crops in terms of the number of work days is also very different between households in AGP woredas and households in non-AGP woredas.

Table 5.6. Average family labour used (in adult equivalent labour days)[1] per hectare of crop, by household categories, AGP status, and crop

Category	Statistic	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil Seeds	Vegetables	Root Crops	Fruit Crops	Chat	Coffee	Enset
All HHs	**Median**	116	81	93	120	99	66	58	106	106	22	42	57	80
Female HHHs	**Median**	84	58	67	96	87	58	48	112	102	15	39	44	72
Male HHHs	**Median**	128	90	104	132	106	70	62	106	107	23	44	65	82
Mature HHHs	**Median**	130	90	99	128	111	68	55	112	105	17	42	60	80
Youth HHHs	**Median**	105	74	90	108	77	66	69	98	112	29	57	51	84
AGP woredas	**Median**	92	71	91	97	76	59	49	112	77	22	49	51	64
Non-AGP woredas	**Median**	129	84	94	130	108	71	62	103	115	22	42	58	87

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: [1] Adult equivalent labour days are obtained as a weighted sum of labour days reported for adult males (weight=1), adult females (weight=0.84), and children below the age of 15 (weight =0.48); The weights are derived as averages across activities for each group estimates reported by ILCA (1990). HHHs', 'HHs', and 'SD' stand respectively for 'Headed Households' and 'Households'.

5.3. Modern Inputs Use

Improving productivity via increased adoption and application of modern inputs are among important objectives of AGP. The data in this survey indicate that a considerable number of the households do not use fertilizer, although the number applying has increased in the recent past. Moreover, the data show that a large proportion of those using fertilizer apply small quantities. In addition, only a small proportion of the households uses other modern inputs and apply soil conservation and other modern production methods.

This section is divided into 4 subsections. In the first subsection we provide a detailed account of application levels of chemical fertilizer, the most widely used modern input. In the second subsection we provide a brief description of application levels of improved seeds, irrigation, and soil conservation practices. The third subsection describes the type and extent of use of modern production methods. The fourth subsection discusses the problems households face in applying each of the inputs discussed in the first 3 subsections: fertilizer, improved seeds and soil conservation, and other modern production methods.

Fertilizer Application Levels

In Table 5.7 we summarize household level average chemical fertilizer application rates for all

households and for households that actually applied chemical fertilizer. In the aggregated sample, 58 percent of households in the study area used chemical fertilizers during the Meher 2010/11. On average, farm households in the study area applied 27 kg of chemical fertilizer made up of DAP and urea separately or together per plot. This pattern holds more or less across male and female and mature and young headed households. On average, male headed households applied 46 percent more chemical fertilizers compared to female headed households. This gap narrows down considerably when we compare actual users only (see below). Relative to households with young heads, those with mature heads used 10 percent more chemical fertilizer.

Table 5.7. Proportion of chemical fertilizer users and average application rate of fertilizer on a plot of land for all farmers and users only (in kg), by household categories and AGP status

Group	Category	Chemical fertilizer users (%)	DAP-All farmers (kg)	DAP-User farmers Only (kg)	Urea-All farmers (kg)	Urea-User farmers only (kg)	DAP+Urea-All farmers (kg)	DAP+Urea-User farmers only (kg)
National	All HHs	57.6	17.2	33.7	9.7	28.6	27.0	49.2
	Female HHHs	48.2	13.5	31.1	6.9	25.2	20.4	44.0
	Male HHHs	61.7	18.8	34.5	10.9	29.7	29.7	51.0
	Mature HHHs	57.7	17.7	34.6	10.2	29.5	27.9	51.0
	Youth HHHs	57.4	16.3	32.1	9.0	27.0	25.4	46.3
AGP woredas	All HHs	62.3	19.3	37.0	12.7	31.8	32.0	55.0
	Female HHHs	51.2	13.4	32.7	9.3	28.5	22.7	47.7
	Male HHHs	67.0	19.3	38.4	14.1	32.9	33.4	57.0
	Mature HHHs	62.1	17.8	37.5	13.2	32.5	31.0	55.8
	Youth HHHs	62.7	17.1	36.1	12.0	30.8	29.1	52.9
Non-AGP woredas	All HHs	55.7	16.6	32.6	8.8	27.4	25.4	47.3
	Female HHHs	46.9	13.5	30.6	6.0	23.6	19.5	42.6
	Male HHHs	59.5	18.6	33.1	9.6	28.0	28.2	48.5
	Mature HHHs	55.9	17.7	33.5	9.0	28.0	26.6	49.0
	Youth HHHs	55.3	16.1	30.7	7.9	25.1	23.9	43.7

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' and 'HHs' stands respectively for 'Headed Households' and 'Households'.

Around 12 percent more households used chemical fertilizer in AGP woredas compared to those in non-AGP woredas. As was observed in the aggregated sample, on average male and mature headed households applied more chemical fertilizer than female and young headed households in both AGP and non-AGP woredas. Moreover, all subgroups of households in AGP woredas apply more chemical fertilizer relative to their counterparts in non-AGP woredas.

Average chemical fertilizer application rates of households that actually used chemical fertilizer is also presented in Table 5.7. The fact that only 57 percent of the households applied chemical

fertilizer during the 2010/11 Meher season implies that application rates among households using the input is significantly larger than for the overall average. Actual fertilizer users, on average, applied 49.2 kg per plot — a rate which is more than double that recorded over all households. All observations made about average fertilizer application rates regarding all households also hold among households that apply fertilizer. First, households with male and mature heads applied more than their counterparts in the aggregated sample as well as in AGP and non-AGP woredas. Second, households in AGP woredas applied on average more chemical fertilizer relative to those in non-AGP woredas. Finally, all subgroups in AGP woredas applied on average more relative to the corresponding groups in non-AGP woredas.

Crop-wise disaggregated averages of chemical fertilizer use by households are presented in Table 5.8. The numbers in the table indicate two features that are common to all categories of households in the aggregated sample as well as in both AGP and non-AGP woredas. The first common feature is that the four largest magnitudes of chemical fertilizer application per hectare were on plots cultivated with wheat, teff, barley, and maize, in that order.

Table 5.8. Total chemical fertilizer use per crop by household categories and AGP status (kg/ha)

Group	Category	Teff	Barely	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops	Fruits	Chat	Coffee	Enset
National	All HHs	77.5	70.9	106.7	55.9	3.4	23.3	2.6	8.9	32.7	0.1	1.5	0.4	2.4
	Female HHHs	70.6	68.4	89.4	46.0	2.2	18.8	1.0	5.9	29.2	0.0	1.2	0.2	4.8
	Male HHHs	79.7	71.8	112.8	60.1	3.8	24.9	3.1	10.2	34.0	0.1	1.6	0.5	1.4
	Mature HHHs	76.6	69.2	105.5	55.0	4.0	21.1	2.4	8.0	28.5	0.1	1.9	0.4	2.7
	Youth HHHs	79.2	73.7	108.7	57.5	2.3	27.5	2.9	10.8	39.9	0.0	0.8	0.5	1.7
AGP woredas	All HHs	89.3	73.0	131.0	53.8	4.2	22.2	3.6	13.7	23.3	0.0	4.4	0.4	0.7
	Female HHHs	73.7	81.8	103.6	41.4	2.1	15.3	2.8	13.7	16.2	0.0	4.3	0.5	0.2
	Male HHHs	94.3	70.0	140.8	58.8	4.9	24.5	3.8	13.7	25.3	0.0	4.4	0.3	0.9
	Mature HHHs	81.6	73.2	126.5	51.3	4.7	21.3	4.6	13.1	23.8	0.0	5.4	0.4	1.0
	Youth HHHs	103.3	72.7	139.4	58.9	3.4	23.9	1.9	14.6	22.4	0.0	2.7	0.4	0.1
Non-AGP woredas	All HHs	73.0	70.3	99.2	56.6	3.1	23.6	2.2	6.5	35.3	0.1	0.4	0.5	2.9
	Female HHHs	69.4	65.1	84.9	47.5	2.2	19.6	0.4	2.5	32.1	0.0	0.0	0.2	6.2
	Male HHHs	74.1	72.2	104.2	60.6	3.4	25.1	2.8	8.2	36.5	0.1	0.5	0.6	1.5
	Mature HHHs	74.7	68.1	98.8	56.3	3.7	21.0	1.6	5.7	29.6	0.1	0.6	0.4	3.3
	Youth HHHs	70.0	74.0	99.9	57.1	1.9	28.4	3.3	8.3	45.2	0.0	0.0	0.5	2.3

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' and 'HHs' stand respectively for 'Headed Households' and 'Households'.

The survey also included questions on households' use of organic fertilizer. Although about 57 percent of the households applied chemical fertilizer, a large majority (98 percent) applied manure in their fields. It is also interesting to note that more than 90 percent of the households applied manure to more than one-half of their fields. Out of the total plots cultivated in the 2010/11 main agricultural season more than 86 percent were applied with manure. Moreover, about 12 percent of the households applied compost on their fields. Assuming chemical fertilizers, manure, and compost are more or less substitutes, about 98.5 of the households used some kind of fertilizer. Moreover, the proportion of the households that applied a combination of these fertilizers is larger relative to those that applied only one type. The proportion of households that applied only chemical fertilizers was small at 0.4 percent. By contrast 33 and 8 percent of the households applied only manure or compost, respectively. Moreover, 41.6 percent of the households applied chemical fertilizer and manure, while about 15 percent applied all three types.

Average crop level per hectare fertilizer application rates of households in the different categories and woredas that use chemical fertilizers are summarized in Table 5.9. As expected, application rates are significantly higher when the computation is confined to users alone. Nevertheless, note that the large increase for some of the crops is largely due to the small number of users in the sub-sample. This is particularly true for non-cereal crops. For instance, only 2 fruit producers reported chemical fertilizer use. The analogous number for coffee, chat, and enset producers are 19, 35, and 37, respectively. The number of adopters was so small that these crops were dropped from Table 5.9. The only cereal with a relatively small fertilizer-using sub-sample is sorghum with 247 households.

Table 5.9. Total chemical fertilizer use intensity, by household categories, AGP status, and crop classification for fertilizer users (kg/ha)

Group	Category	Teff	Barely	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops
National	All HHs	126.5	144.6	149.4	160.6	66.2	115.8	47	111.8	118.6
	Female HHHs	129.3	144.1	136.3	147.2	68.6	105	24.7	87.8	104
	Male HHHs	125.8	144.8	153.5	165.5	65.7	119.1	51.6	119.7	124.3
	Mature HHHs	125.7	141.9	147.3	156	80.6	111.1	40.5	102	111.3
	Youth HHHs	128	149.2	153	169.4	42.6	123.4	60.5	130.9	129.1
AGP woredas	All HHs	142.3	127.9	168.8	157.0	56.5	106.5	73.2	150.8	106.3
	Female HHHs	133.2	139.1	143.2	146.8	54.6	85.4	58.1	166.0	82.9
	Male HHHs	144.7	123.9	177.1	160.2	56.7	112.3	77.2	146.0	112.3
	Mature HHHs	133.8	127.0	165.7	153.5	58.9	104.3	82.4	143.8	120.0
	Youth HHHs	156.3	129.5	174.2	163.7	51.6	110.5	49.7	162.3	89.7
Non-AGP woredas	All HHs	120.3	149.9	142.8	161.8	72.4	118.2	38.8	87.3	121.2
	Female HHHs	127.8	145.8	133.8	147.4	74.3	109.5	10.6	41.5	107.1
	Male HHHs	118.2	151.2	145.5	167.4	72.0	120.9	44.0	102.8	127.1
	Mature HHHs	122.5	146.8	140.9	156.9	96.4	112.9	26.1	77.8	109.6
	Youth HHHs	116.2	154.8	146.0	171.4	37.9	126.2	63.3	107.5	138.2

Source: Authors' compilation, AGP base line survey, 2011
Notes: 'HHHs' and 'HHs' stand respectively for 'Headed Households' and 'Households'.

We pointed out earlier the relatively small differences in average chemical fertilizer application rates among households using chemical fertilizer. With the exception of teff and sorghum, male household heads applied more fertilizer for all the crops compared to female heads. Similarly, households with young heads applied more fertilizer per hectare for all the crops in the table except sorghum. The pattern just described varies however between AGP households and non-AGP households.

Trends in Fertilizer Application

As will become clear in the following section, chemical fertilizer is the most widely used modern input (and one that is intensively promoted by the government). However, on average only one-half of the households used chemical fertilizer during the 2006/07–2010/11 period, with the largest share in 2010/11 (56 percent) (Table 5.10). However, adoption is rapidly increasing as shown in the trend of the percentage of households using fertilizer, which has grown at an average annual rate of 6.2 percent.

Although differences in chemical fertilizer application levels are small when comparing crop level application rates, relatively fewer female headed households used fertilizer over the 5 years considered. Moreover, the rate of growth in the number of female headed households applying fertilizer was slower relative to male headed households. Only 39.4 percent of the female headed households applied fertilizer in 2006/07 and the number grew at an average

annual rate of 4.6 percent to get to 47 percent in 2010/11. By contrast about 46 percent of male headed households used fertilizer in 2006/07 which grew to 59.6 percent in 2010/11 at an average annual rate of 6.9 percent, which is 50 percent larger than the growth rate in female headed households.

On average only 47 percent of the households with young heads applied chemical fertilizer during the 2006/07–2010/11 period, while the average for households with mature heads was 51 percent. However, the fraction of young headed households adopting fertilizer has been growing faster albeit from a lower base.

While about 49 percent of the households in non-AGP woredas applied chemical fertilizer during the 5 year period, the proportion was larger in AGP woredas (53 percent). However, the number applying fertilizer increased relatively faster over the past five years in AGP woredas by 17 percent relative to the 7 percent in non-AGP woredas. The pattern observed among male vs. female and mature vs. young headed households in the aggregated sample also holds in both AGP and non-AGP woredas.

Table 5.10. Trends in fertilizer application, by household categories, AGP status, and region (% of all households using chemical fertilizer)

Groups	Category	Period					
		2006/07	2007/08	2008/09	2009/10	2010/11	Average
National	All HHs	43.8	46.8	49.9	52.5	55.8	49.8
	Female-HHHs	39.4	41.3	44.1	46.4	47.1	43.7
	Male HHHs	45.7	49.2	52.4	55.2	59.6	52.4
	Mature HHHs	45.7	48.8	51.5	53.6	56.7	51.3
	Youth HHHs	40.6	43.5	47.2	50.8	54.3	47.3
AGP woredas	All HHs	42.8	50.7	54.1	56.8	60.6	53.0
	Female HHHs	41.8	43.8	45.5	47.9	50.4	45.9
	Male HHHs	49.5	53.7	57.8	60.7	65.0	57.3
	Mature HHHs	49.4	52.8	55.0	57.3	60.6	55.0
	Youth HHHs	43.2	47.0	52.5	56.0	60.7	51.9
Non-AGP woredas	All HHs	47.2	45.6	48.6	51.2	54.4	49.4
	Female HHHs	38.6	40.6	43.6	45.9	46.0	42.9
	Male HHHs	44.6	47.7	50.7	53.5	57.9	50.9
	Mature HHHs	44.6	47.5	50.4	52.4	55.5	50.1
	Youth HHHs	39.8	42.4	45.6	49.2	52.4	45.9

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' and 'HHs' stand respectively for 'Headed Households' and 'Households'

Application Levels of Improved Seeds, Irrigation, and Soil Conservation

Households obtain high yielding seeds either through new purchases, mostly from government agencies, or by saving from their own output, using high yielding variety seeds bought in

previous seasons or years. In this survey we made an effort to measure the extent of use of both types of seeds. Out of all plots, about 90 percent were planted with local seeds, about 1.3 percent with seeds saved from output produced by using previously bought high yielding variety seeds, and 6.3 percent with freshly bought high yielding variety seeds (Table 5.11). The remaining 2.1 percent were sown with a combination of the three types. While 76 percent of the total improved seed was newly bought, the remaining 24 percent was saved from the output of previously used improved seeds.

Although 23.5 percent of the households used improved seeds during the Meher 2010/2011 season, the amount used in the study area averaged less than a kilogram per hectare (Table 5.11). However, among users application rates of improved seeds was significantly large at about 11.1 kg per hectare. Although the proportion of female headed households that applied improved seeds is 8 percentage points lower compared to male headed households, application rate was not significantly different between male and female headed households who actually applied the input. Slightly more households with mature heads applied improved seeds. Relative to households in AGP woredas, more households in non-AGP woredas used improved seeds and the average application rate of improved seeds by households using the input was larger. Both of the last observations also hold for households in all age and gender categories.

Table 5.11. Improved seed use, irrigation, and soil conservation, by household categories and AGP status (100%=all farmers)

Group	Category	Improved seed users (%)	Improved seed use – All Farmers (kg/ha)	Improved seed use – User Farmers Only (kg/ha)	Irrigation (%)	Soil conservation (%)
National	**All HHs**	**22.5**	**2.1**	**11.1**	**4.2**	**72.4**
	Female HHHs	16.7	1.5	10.9	2.9	66.4
	Male HHHs	24.9	2.3	11.1	4.7	75.0
	Mature HHHs	22.7	2.1	10.9	4.3	73.4
	Youth HHHs	22.1	2.1	11.4	4.0	70.8
AGP woredas	**All HHs**	**22.1**	**2.1**	**10.6**	**7.8**	**71.0**
	Female HHHs	18.2	1.5	10.5	1.9	66.2
	Male HHHs	23.7	2.4	10.6	3.6	73.2
	Mature HHHs	21.8	2.1	10.1	3.1	71.0
	Youth HHHs	22.6	2.1	11.2	3.0	71.1
Non-AGP woredas	**All HHs**	**22.6**	**1.9**	**11.2**	**3.1**	**72.8**
	Female HHHs	16.3	1.6	11.0	6.4	66.4
	Male HHHs	25.3	2.1	11.3	8.3	75.6
	Mature HHHs	23.0	1.8	11.1	8.0	74.1
	Youth HHHs	22.0	2.1	11.4	7.4	70.7

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' and 'HHs' stand respectively for 'Headed Households' and 'Households'

In the study area only 4.2 percent of the households irrigated their plots while a significantly large proportion (72 percent) practiced some soil conservation measures. Relative to female headed households, the proportions of households with male heads that used irrigation and/or soil conservation measures were larger. The same is true when comparing mature and youth headed households, although the difference is narrower in this case. A relatively larger proportion of AGP households irrigated their land relative to the corresponding categories of non-AGP households. By contrast, a relatively larger proportion of all non-AGP households applied soil conservation methods, with the exception of mature headed households in which case the proportion was larger for AGP woredas.

Modern Production Methods

This section describes the type and use of the advice on modern production methods and inputs that households in the study area acquire from agricultural extension agents. While application levels of modern inputs that we described above partly measure the extent to which extension agents were able to convince farmers into using the inputs, the description in this section shows the efforts being made by the latter in any given year.

During the Meher season of 2010/2011 about 35 percent of the households were visited by an extension agent at least once (Table 5.12). That more than a third of the households were visited at least once in only one agricultural season and more than a quarter were visited more than once is noteworthy.

A larger fraction of male headed households were visited compared to female headed households: i.e., 46, 50, and 45 percent more households with male heads were visited at least once in the aggregated sample, in AGP woredas, and non-AGP woredas, respectively. Relative to households with mature heads those with young heads were also visited more in total, in AGP woredas, and in non-AGP woredas. The percentage of households visited by extension agents is the same for both AGP and non-AGP woredas.

Households were requested to mention the 3 important advises and assistances out of the six listed in the questionnaire and mention others that are not on the list. Information provided on new inputs and production methods were selected by respondents as by far the two most important services received by visited households 35 percent and 34 percent of the households selecting the two as most important, respectively. All household groups in all locations did the same, though the order in which the two were selected was not always the same. Extension agents' help in obtaining fertilizer was the third important support identified by all groups of households (Table 5.12).

Table 5.12. Main help from extension agents' visit, by household categories and AGP status

Group	Category	Proportion visited (%)	Main help from extension agent for those visited, introducing:						
			New inputs	New methods	New crops	Fertilizer	Improved seed	Credit	Others
National	All HHs	35.0	34.9	34.1	6.4	12.5	6.6	0.7	4.8
	Male HHHs	38.7	34.9	33.4	6.5	13.4	6.6	0.6	4.6
	Female HHHs	26.5	35.1	36.3	6	9.5	6.6	1	5.6
	Mature HHHs	37.1	33.4	36.3	6.8	12.8	5.9	0.8	4
	Youth HHHs	31.5	37.8	29.6	5.6	12.1	8	0.6	6.3
AGP woredas	All HHs	35.0	41.7	28.4	5.5	10.6	6.7	1.0	6.0
	Male HHHs	38.9	42.5	28.2	5.8	10.3	6.2	0.9	6.2
	Female HHHs	26.0	39.0	29.2	4.7	11.8	8.4	1.3	5.6
	Mature HHHs	35.9	40.2	30.2	6.5	10.8	5.1	0.8	6.3
	Youth HHHs	33.4	44.5	25.0	3.7	10.3	9.5	1.5	5.5
Non-AGP woredas	All HHs	35.0	32.8	35.8	6.7	13.1	6.6	0.6	4.4
	Male HHHs	38.7	32.5	35.1	6.8	14.4	6.7	0.6	4.1
	Female HHHs	26.6	33.9	38.5	6.3	8.8	6.0	0.9	5.6
	Mature HHHs	37.5	31.4	38.2	6.9	13.3	6.1	0.8	3.3
	Youth HHHs	31.0	35.7	31.1	6.2	12.6	7.5	0.3	6.6

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' and 'HHs' stand respectively for 'Headed Households' and 'Households'.

5.4. Factors contributing to low levels of use of modern inputs and production methods

Adoption of modern inputs requires timely and sufficient availability of these inputs. It may also require access to credit, in addition to the information households obtain on the inputs and production methods. This section looks at some of such and related challenges faced by households in the study area.

Households were asked to name the three most important problems they face in accessing fertilizer whether or not they applied fertilizer. While 87.6 percent indicated they faced at least one problem, 12.4 percent indicated they did not have a problem or the question was not relevant for them. A summary of the problems indicated as important by the households surveyed are summarized in Table 5.13.

Table 5.13. Constraints to fertilizer adoption — proportion of households reporting as most important constraint to adoption (%), by household categories and AGP status

Groups	Category	Shortage of supply	Arrived late	High price	Lack of credit	Others	No problem/ not relevant
National	All HHs	20.4	12.0	35.9	14.5	4.7	12.4
	Female HHHs	19.3	10.6	35.3	14.7	5.9	14.2
	Male HHHs	20.9	12.7	36.2	14.4	4.2	11.6
	Mature HHHs	20.9	11.9	36.3	14.0	4.5	12.4
	Youth HHHs	19.6	12.3	35.1	15.4	5.0	12.5
AGP woredas	All HHs	16.5	11.9	40.8	12.2	14.0	4.7
	Female HHHs	16.1	11.6	38.6	12.5	15.4	5.9
	Male HHHs	16.7	12.0	41.7	12.1	13.4	4.2
	Mature HHHs	16.3	12.2	41.4	11.3	14.1	4.8
	Youth HHHs	17.0	11.3	39.7	13.8	13.8	4.4
Non-AGP woredas	All HHs	21.6	12.1	34.4	15.2	12.0	4.7
	Female HHHs	20.3	10.2	34.3	15.4	13.9	5.9
	Male HHHs	22.2	12.9	34.5	15.1	11.1	4.2
	Mature HHHs	22.4	11.8	34.8	14.8	11.8	4.4
	Youth HHHs	20.4	12.6	33.8	15.9	12.2	5.2

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' and 'HHs' stand respectively for 'Headed Households' and 'Households'

The problem that is cited as important by most households (36 percent) is the high price of fertilizer. It was also second in importance among households that selected another problem as first. The second important factor that contributed to low levels of adoption or application of fertilizer was shortage of supply. The first and second problems were also selected by most households in all categories in the aggregated sample, in AGP woredas, and in non-AGP woredas. The third and fourth important factors were unavailability of credit and untimely arrival of fertilizer supply.

There are significant differences in the factors cited as important across AGP and non-AGP woredas. Relative to AGP households, a larger fraction of non-AGP households deemed shortage of supply and lack of credit as more important constraints. In contrast, a considerably large proportion of households in AGP woredas considered high fertilizer price as the most important limitation.

The survey questionnaire also included questions on timely availability and/or use of inputs as well as credit. In Table 5.14 below we summarize the inputs that were made available before the start of the season.

Table 5.14. Availability of modern inputs — proportion of households reporting availability in time (%), by household categories and AGP status (100% = all households)

Group	Category	Input available before the start of the main planting season			
		Fertilizer	Local seed	Improved seed	Other inputs
National	All HHs	52.6	72.1	34.8	46.5
	Male HHHs	49.6	72.5	32.0	43.0
	Female HHHs	53.9	71.9	36.0	47.9
	Mature HHHs	51.4	71.5	33.7	46.3
	Youth HHHs	54.6	73.0	36.7	46.8
AGP woredas	All HHs	56.5	58.9	29.9	49.7
	Male HHHs	58.6	76.0	37.4	46.8
	Female HHHs	51.3	76.3	33.7	42.2
	Mature HHHs	56.6	75.5	35.0	45.4
	Youth HHHs	56.1	77.1	38.5	45.5
Non-AGP woredas	All HHs	51.4	76.1	36.3	45.5
	Male HHHs	52.4	58.4	31.4	51.4
	Female HHHs	49.1	60.1	26.3	45.8
	Mature HHHs	49.8	58.9	29.4	48.9
	Youth HHHs	54.1	59.0	30.7	51.1

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' and 'HHs' stand respectively for 'Headed Households' and 'Households'. Other inputs include herbicides, pesticides, and fungicides.

Fifty-three percent of the respondents indicated that fertilizer arrived in a timely fashion, while 35 percent reported timely arrival of improved seeds. Included in the "Other inputs" category are herbicides, pesticides, and fungicides, which are often used at a later stage; about 46 percent of the households reported their timely availability. The ranking of the inputs according their timely availability is similar for all households across categories. Respondents who used purchased inputs were asked whether or not they used credit to purchase the inputs and why not if they did not. The inputs consisted of DAP, Urea, local and improved seeds, herbicides, pesticides, and fungicides. Table 5.15 summarizes the information on the proportion of households that purchased DAP using credit and the reasons for those who did not.

Let us consider the issue among households that used DAP, which constituted 64 percent of the total chemical fertilizer used during the 2010/2011 Meher season. Out of all households that used DAP in 2010/2011 only 16.6 percent used credit to purchase the input. Out of those households who did not use credit to purchase DAP, 29.5 percent did not need to use credit or had sufficient funds to buy the input. Out of the remaining 70.5 percent that did not use credit, by far the largest proportion (53.4 percent) claimed not to have access to credit institutions in their localities. The second important reason for not using credit to buy DAP was the rejection of

applications (8.6 percent). Fear of not being able to pay back, high interest rate of loans, lack of assets for collateral, fear of rejection of credit applications, and fear of losing collateral were third to seventh in importance, respectively. We did not observe considerable differences across household categories regarding the nature and the significance of these reasons.

Table 5.15. Percentage of households that purchased Dap with credit and reasons for not using credit, by AGP status and household categories

Group	Category	Purchased input with credit	Reason for not purchasing with credit							
			No need for credit	Asked for credit but was refused	Credit provider not available	Fear of being rejected	Lack of assets for collateral	Fear of losing asset held as collateral	Fear of not being able to pay back	Interest rate too high
National	All HHs	16.62	29.45	8.59	53.43	0.85	1.19	0.38	3.98	2.12
	Male HHHs	17.05	30.14	8.58	53.25	0.73	1.06	0.44	3.34	2.46
	Female HHHs	15.36	27.47	8.61	53.95	1.21	1.56	0.22	5.87	1.11
	Mature HHHs	15.66	28.78	9.26	53.28	0.81	0.87	0.47	3.96	2.57
	Youth HHHs	18.26	30.64	7.41	53.69	0.93	1.74	0.23	4.02	1.33
AGP woredas	All HHs	18.19	33.41	10.82	48.69	1.24	0.60	0.23	2.42	2.34
	Male HHHs	19.61	33.15	10.05	49.22	1.31	0.55	0.31	2.50	2.61
	Female HHHs	13.70	34.17	13.06	47.16	1.02	0.77	0.00	2.19	1.55
	Mature HHHs	16.54	32.67	11.62	48.03	1.41	0.75	0.18	2.61	2.59
	Youth HHHs	21.08	34.79	9.32	49.93	0.92	0.33	0.33	2.06	1.88
Non-AGP woredas	All HHs	16.13	28.05	7.84	54.58	0.73	1.36	0.43	4.45	2.04
	Male HHHs	16.22	29.00	8.07	54.15	0.54	1.21	0.48	3.57	2.40
	Female HHHs	15.85	25.28	7.20	55.80	1.26	1.80	0.29	6.97	0.97
	Mature HHHs	15.38	27.30	8.43	54.52	0.61	0.90	0.56	4.36	2.54
	Youth HHHs	17.38	29.34	6.83	54.67	0.93	2.16	0.20	4.59	1.16

Source: Authors' calculations using data from the AGP Baseline Survey 2011
Notes: 'HHHs' and 'HHs' stand respectively for 'Headed Households' and 'Households'.

In the previous section, it was noted that about 35 percent of the households were at least once visited by extension agents. To understand households' problems where the services were available and where they were not, respondents were asked in the survey to select the reason why they were not visited by extension agents. Moreover, they were asked to name their own reasons if they were not among the 11 listed in the questionnaire. Table 5.16 summarizes some of their responses.

29 percent of the surveyed households selected 'insufficient number of agents' as an important reason for not being visited and this was an important reason across all household categories. Together with the 2.5 percent of households that resided in villages where there were no extension agents, the lack or unavailability of the extension services accounted for 31 percent of the households that were not visited. That means the remaining 69 percent have other reasons. It is surprising that the next most important reason — that held across all household categories

— is the fact that farmers did not know there were such services (12.6 percent of the households in the aggregate sample).

Table 5.16. Main reason for not being visited by extension agents, by household categories and AGP status (%)

Group	Category	Reason for not being visited by extension agents											
		Advice they provide is unsuitable or unhelpful	Not interested in changing cultivation practices	Do not wish to borrow money to purchase inputs	No extension agent available in this PA	Not enough extension agents available in this village	Did not know about services offered by extension agents	Extension agents only help farmers with more land	Extension agents only help male farmers	Extension agents only help farmers with oxen	Extension agents only help farmers who are friends or relatives	Extension agents only help educated farmers	Other
National	All HHs	3.9	5.1	2.5	2.5	28.6	12.6	4.1	1.2	1.3	5	3.9	29.5
	Female HHHs	4.1	5.6	2.4	2.1	30.4	11.4	4.4	0.1	0.8	6	4.2	28.5
	Male HHHs	3.6	4.0	2.6	3.2	25.0	14.8	3.5	3.3	2.3	3.1	3.2	31.6
	Mature HHHs	3.8	4.7	2.4	2.4	28.2	13.6	4.4	1.4	1.3	5	3.9	29
	Youth HHHs	4.2	5.7	2.6	2.6	29.1	11.0	3.6	0.8	1.3	5	3.8	30.4
AGP woredas	All HHs	2.0	4.5	2.9	1.7	29.9	15.5	5.0	1.3	1.5	5.4	3.0	27.3
	Female HHHs	1.7	3.5	3.5	1.6	26.3	19.2	4.7	3.4	1.5	4.4	2.6	27.6
	Male HHHs	2.2	5.1	2.6	1.8	31.7	13.5	5.1	0.2	1.5	5.9	3.2	27.2
	Mature HHHs	1.7	3.9	2.6	1.4	31.1	15.8	5.0	1.7	1.4	5.7	3.2	26.5
	Youth HHHs	2.6	5.6	3.5	2.2	27.8	14.9	5.0	0.6	1.7	4.9	2.7	28.6
Non-AGP woredas	All HHs	4.5	5.2	2.3	2.7	28.2	11.7	3.8	1.2	1.2	4.8	4.2	30.2
	Female HHHs	4.2	4.1	2.2	3.7	24.6	13.4	3.1	3.2	2.6	2.6	3.4	32.9
	Male HHHs	4.7	5.8	2.4	2.2	30.0	10.8	4.1	0.1	0.5	6.0	4.6	28.9
	Mature HHHs	4.5	4.9	2.4	2.7	27.2	12.9	4.2	1.3	1.2	4.7	4.2	29.7
	Youth HHHs	4.6	5.7	2.3	2.7	29.5	9.8	3.2	0.9	1.2	5.0	4.1	31.0

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' and 'HHs' stand respectively for 'Headed Households' and 'Households'. PA stands for Peasant Association

Chapter 6: Utilization and Marketing of Crops, Livestock, and Livestock Products

In this chapter we describe how households use their crop, livestock, and livestock products. Moreover, we provide descriptions on revenues generated, prices, transportation costs, and marketing mechanisms involved in selling of their crops, livestock, and livestock products. For that purpose the chapter is divided into three major sections that respectively deal with crops, livestock, and livestock products.

6.1. Crop Utilization and Marketing

One of the salient features of crop production in countries such as Ethiopia is that households consume a significant fraction of the output they harvest. In other words, farmers are largely subsistent. Thus, in the first subsection we will briefly describe the proportion of each crop output that is consumed at home, saved for seed, and sold. In the second subsection we describe revenues generated from crop sales and their variation over the households surveyed. The last section deals with transportation costs and marketing mechanisms involved in the sales of crops.

Crop Utilization

In Table 6.1 we summarize utilization rates of the five important cereals (teff, barley, wheat, maize, and sorghum) as well as nine other crops including pulses, oilseeds, enset, and coffee [14,15]. There are significant differences in the proportions consumed and sold among the most important cereals. Teff is the most marketed cereal with 25 percent of output sold. With 57 percent used for home consumption, teff is also the least home-consumed crop, not only relative to other cereals but also relative to non-cereals, with the exception of oilseeds and chat. The four other cereals had a rate of home consumption of at least 60 percent. Seventy-eight percent of maize output, the most important crop in total crop output, was consumed at home while only 13 percent of maize production was marketed. At 78.5 percent, a similar proportion of sorghum is home-consumed while only 10.2 percent is sold. About the same proportion of barley is sold at 10.8 percent while the proportion consumed at home is slightly lower at 66 percent. Next to teff the cereal with the largest proportion sold is wheat at 17.7 percent and the proportion of wheat consumed at home is 61 percent.

[14] The information on crop use was collected by asking the household how they used the crop production of the year prior to the survey.

[15] Note that the reported numbers in Table 6.1. do not add up to 100% because of non-reported categories in the Table (e.g. wastage, animal feed, other uses).

The crop with both the largest proportion consumed at home and the lowest proportion marketed is enset at respective rates of 91.3 and 6.2 percent. Oilseeds and chat, 67.8 and 81.1 percent of which are marketed, constitute the only two crops where less than one-half is home consumed. Over 63 percent of the coffee produced is consumed at home. However, coffee is the fourth most marketed crop next to chat, oilseeds, and fruit crops with 34.6 percent of the coffee produced sold, followed by teff, vegetables, pulses, root crops, and wheat. The proportion of total output saved as seed for the next season was considerable for barley, wheat, pulses, teff, root crops, and oil seeds (10-18 percent). The proportion of maize and sorghum saved as seed was lower (5-6 percent).

Table 6.1 further shows the difference in utilization rates between households with female and male heads and with mature and young heads. With the exception of enset, female headed households consumed even larger proportions at home of those crops that have high home consumption on average (such as cereals, vegetables, and pulses); and they consumed less of those that are largely for sales, (oilseeds, chat, and coffee). Relative to youth headed households; mature headed households consumed larger proportions of their output at home (except for root crops, fruit crops, and enset) and sold less of every item (except for oil seeds and root crops). Relative to an average household in non-AGP woredas, those in AGP woredas consumed less (except for teff, chat, and root crops) and sold more of every type of crop (except for teff and pulses).

Table 6.1. Crop use (%), by AGP status, household categories, and crop type (100%=total crop production)

Group	Category	Variable	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
National	All HHs	Consumption	57.6	66.3	60.9	78.4	78.5	57.1	19.1	71.8	65.0	57.4	17.3	63.7	91.3
		Seed	13.2	18.4	18.1	5.5	6.1	15.8	10.2	1.7	10.6	0.6	0.3	0.3	0.3
		Sale	25.3	10.8	17.7	12.5	10.2	23.1	67.8	23.9	22.8	38.8	81.1	34.6	6.2
	Female HHHs	Consumption	60.7	66.7	64.3	82.7	79.1	60.7	17.4	73.2	66.4	62.2	11.4	60.8	89.4
		Seed	13.1	17.1	16.9	5.8	6.6	15.3	8.7	1.0	10.7	1.3	0.7	0.1	0.5
		Sale	23.3	11.3	15.7	9.1	9.0	19.6	72.1	23.2	21.8	31.3	86.9	37.5	7.8
	Male HHHs	Consumption	56.6	66.1	59.7	76.7	78.3	55.8	19.6	71.2	64.5	55.6	19.1	64.7	92.1
		Seed	13.2	18.8	18.5	5.4	5.9	16.0	10.7	2.0	10.5	0.4	0.1	0.4	0.2
		Sale	25.9	10.6	18.3	13.9	10.7	24.3	66.5	24.1	23.1	41.5	79.4	33.6	5.5
	Mature HHHs	Consumption	58.2	67.3	61.8	79.7	79.4	58.3	20.0	73.5	64.9	57.3	18.1	64.2	91.3
		Seed	13.3	18.5	19.0	5.8	6.7	16.0	9.8	1.3	9.9	0.9	0.3	0.3	0.3
		Sale	24.9	9.9	15.9	11.7	9.5	22.1	68.0	22.8	23.7	38.5	80.8	34.3	6.1
	Youth HHHs	Consumption	56.6	64.5	59.4	76.2	77.0	54.9	17.7	68.5	65.2	57.6	15.8	62.5	91.5
		Seed	12.9	18.1	16.5	5.0	5.1	15.3	10.9	2.5	11.9	0.0	0.2	0.3	0.3
		Sale	26.0	12.3	20.7	14.0	11.5	25.0	67.3	26.0	21.0	39.3	81.9	35.4	6.2
AGP woredas	All HHs	Consumption	60.2	66.2	58.8	76.5	75.2	55.5	12.4	66.5	65.3	53.2	19.4	58.3	88.7
		Seed	14.0	16.8	18.9	6.0	7.1	18.9	9.2	0.8	8.8	0.2	0.9	0.5	0.6
		Sale	22.6	13.7	19.8	14.1	14.2	23.0	75.7	30.9	24.5	44.1	77.4	39.8	8.7
	Female HHHs	Consumption	64.7	65.7	63.0	80.6	77.9	56.5	13.5	70.6	65.4	51.6	16.1	44.4	87.4
		Seed	12.3	16.9	16.8	4.6	6.6	16.5	7.1	0.2	10.3	0.0	2.2	0.5	0.9
		Sale	20.9	15.6	18.6	12.6	12.5	25.4	77.7	28.5	23.1	46.9	80.8	54.3	10.3
	Male HHHs	Consumption	60.1	64.7	57.2	73.9	74.5	53.6	11.9	65.0	67.3	55.1	20.5	48.4	90.5
		Seed	13.8	16.5	19.4	5.3	7.2	17.0	10.6	1.0	7.6	0.3	0.5	0.4	0.3
		Sale	21.7	14.8	19.5	16.4	14.7	26.0	74.9	32.3	24.0	42.0	76.3	49.4	7.6
	Mature HHHs	Consumption	63.7	67.3	59.5	77.6	75.4	55.4	13.0	67.3	65.7	54.6	19.7	48.1	89.9
		Seed	13.4	16.7	19.6	4.9	7.3	17.6	11.2	0.7	8.7	0.3	1.1	0.6	0.4
		Sale	20.6	13.5	18.3	14.8	14.8	25.0	73.9	31.0	24.6	42.7	76.9	50.5	7.9
	Youth HHHs	Consumption	56.6	60.9	57.1	72.2	75.2	52.3	10.8	65.4	68.8	53.1	18.7	45.4	89.2
		Seed	13.6	16.4	17.2	5.3	6.8	15.6	7.8	0.9	7.5	0.0	0.6	0.1	0.5
		Sale	23.1	17.3	21.0	16.5	13.1	27.5	78.2	31.6	22.5	44.6	78.5	51.6	9.1
Non-AGP woredas	All HHs	Consumption	56.6	66.3	61.6	79.0	79.5	57.5	21.4	74.3	65.0	58.6	16.4	64.9	92.3
		Seed	12.8	18.8	17.8	5.4	5.8	15.1	10.6	2.1	11.1	0.7	0.0	0.3	0.2
		Sale	26.4	10.0	17.0	12.0	9.0	23.1	65.0	20.5	22.3	37.2	82.7	33.4	5.3
	Female HHHs	Consumption	58.9	67.0	64.9	83.7	79.4	61.9	18.6	74.7	66.7	65.6	9.3	67.1	90.5
		Seed	13.5	17.2	17.0	6.4	6.6	14.9	9.1	1.5	10.9	1.8	0.0	0.0	0.3
		Sale	24.3	10.0	14.5	7.5	8.1	18.0	70.3	20.3	21.3	26.3	89.6	31.1	6.6
	Male HHHs	Consumption	54.7	66.6	60.8	78.1	79.5	56.5	22.9	74.5	63.3	55.7	18.6	70.1	92.9
		Seed	12.9	19.7	18.2	5.5	5.5	15.7	10.8	2.5	11.8	0.4	0.0	0.4	0.2
		Sale	28.2	9.0	17.8	12.6	9.4	23.8	62.9	19.7	22.8	41.4	80.6	28.4	4.4
	Mature HHHs	Consumption	55.4	67.2	62.8	80.7	80.5	59.2	22.9	76.6	64.7	58.1	17.4	70.0	92.0
		Seed	13.3	19.2	18.8	6.2	6.5	15.6	9.3	1.6	10.3	1.1	0.0	0.3	0.2
		Sale	27.1	8.6	14.9	10.1	8.0	21.2	65.6	18.6	23.3	37.2	82.3	28.5	5.3
	Youth HHHs	Consumption	56.5	65.9	60.3	78.2	77.6	55.6	20.2	70.3	63.6	58.9	14.4	68.1	92.7
		Seed	12.6	18.7	16.2	4.9	4.6	15.3	12.0	3.5	13.9	0.0	0.0	0.4	0.2
		Sale	27.4	10.4	20.6	12.7	10.9	24.2	63.4	22.6	20.4	37.6	83.4	30.2	4.7

Source: Authors' calculation based on AGP baseline survey, 2011. *Note*: 'HHs' and 'HHHs' stand respectively for "Households heads' and Headed households'.

Revenue from Crop Sales

In this subsection we first describe revenues from crop sales across household categories and AGP status. That will be followed by a description of the pattern in sales revenue.

Revenue from crop sales for the sample as a whole amounts to an average of 3,469 ETB per household for the year prior to the survey. The average crop sales revenue of male headed households and households with matured heads exceeds that of the female headed households and households with young heads by 44 percent and 13 percent, respectively. Average revenue in AGP woredas is 49 percent higher than in non-AGP woredas. When disaggregated by gender and age categories, this gap between AGP and non-AGP woredas ranges from 46 percent for female headed households to 100 percent for youth headed households.

Table 6.2. Average revenue per household from crop sales

Groups	All Households		Female headed Households		Male headed Households		Mature headed Households		Youth headed Households	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
National	3,469	15,402	2,650	8,315	3,813	17,533	3,624	16,400	3,204	13,533
AGP woredas	4,637	27,723	3,427	9,988	5,690	29,875	5,049	26,931	5,000	23,568
Non-AGP woredas	3,109	8,552	2,345	7,536	3,054	8,297	3,051	9,177	2,490	5,764

Source: Authors' calculation based on AGP baseline survey, 2011.
Note: 'SD' stands for 'Standard Deviations'.

In a further analysis, we look at average crop income for those households that sell these crops (Table 6.3.a and 6.3.b). The average revenue from coffee for coffee sellers is 6,159 ETB, which is by far the largest one. The sales of oilseeds by oilseed sellers' account for less than half of the coffee sales, and sales of wheat and teff roughly account for one sixth, and one tenth of the sales of coffee, respectively. When viewed across gender groups, male headed households tend to have higher average revenues from crop sales than their female counterparts except for fruit crops and chat. This difference is especially sizable — exceeding 50 percent — for maize, teff, sorghum, and oils seeds. On the other hand, the average revenue collected by female headed households from fruit crops and chat are about 89 percent and 6 percent higher than for their male counterparts respectively. There is quite some variation in revenues between mature and young headed households. Mature headed households make higher revenue for teff, pulses, oil seeds, vegetables, fruit crops, chat, coffee, and enset; young headed households make more revenue for barley, wheat, maize, sorghum, and root crops.

Table 6.3.a. Average household revenue, , by household categories, and crop types [for households who sold these crops]

Category	Statistics	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
All HHs	Mean	691	374	1021	532	315	688	2781	372	666	208	1990	6159	66
	Median	72	0	0	0	0	7	692	0	0	7	151	0	0
	SD	3238	999	2687	1573	1117	1999	34147	1631	2228	1205	9554	19703	214
Female HHs	Mean	469	328	735	233	181	653	1428	315	577	316	2075	5942	64
	Median	0	0	0	0	0	0	698	0	0	0	115	0	0
	SD	1125	915	1697	745	494	3255	3357	1097	1607	1390	6761	13578	195
Male HHHs	Mean	763	391	1121	654	366	700	3177	395	700	167	1963	6238	67
	Median	135	0	0	0	0	21	692	0	0	8	172	0	0
	SD	3670	1027	2950	1790	1275	1278	38776	1800	2423	1125	10267	21515	222
Mature HHHs	Mean	740	358	903	501	237	730	3153	377	657	212	2101	6514	68
	Median	88	0	0	0	0	0	583	0	0	3	117	0	0
	SD	3954	1088	2535	1575	713	2326	42678	1723	2251	935	10301	15439	228
Youth HHHs	Mean	603	403	1228	587	458	606	2196	363	684	199	1773	5461	63
	Median	35	0	183	0	0	31	778	0	0	8	205	93	0
	SD	1100	826	2924	1568	1605	1129	11737	1437	2181	1615	7903	26116	185

Source: Authors' calculation based on AGP baseline survey, 2011.
Note: 'HHs' and 'HHHs' stand respectively for Households' and 'Headed households'.

Table 6.3.b. Average household revenue, by AGP status, household categories, and crop types [for households who sold these crops]

Group	Category	Statistics	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil Seeds	Vege tables	Root Crops	Fruit Crops	Chat	Coffee	Enset
AGP Households	All HHs	Mean	914	536	1260	514	564	914	7982	871	830	267	5626	6636	94
		Median	60	0	0	0	0	0	560	0	0	2	91	0	0
		SD	1474	735	2410	1582	988	2029	1527	440	1897	860	1419	14245	173
	Female HHHs	Mean	554	523	834	388	347	914	3767	502	537	132	5100	5619	83
		Median	58	0	183	0	0	138	1666	0	0	11	585	1390	0
		SD	939	1610	2322	1086	807	1794	6278	1590	1546	550	10877	13424	231
	Male HHHs	Mean	942	595	1236	766	635	999	8290	896	739	302	5802	7513	85
		Median	120	0	257	0	0	350	1920	0	0	16	550	2687	0
		SD	5833	1501	3316	1840	1577	1835	70671	2867	3060	2253	18602	34288	289
	Mature HHHs	Mean	911	565	1060	657	547	1060	8597	865	808	122	6215	6157	86
		Median	41	0	84	0	0	275	1666	0	0	11	574	2049	0
		SD	6334	1758	3166	1773	1219	1940	78327	2832	3101	398	18564	12003	301
	Youth HHHs	Mean	754	604	1269	677	598	820	5457	648	493	524	4584	8682	82
		Median	141	0	327	0	0	296	2100	0	0	17	454	1897	0
		SD	1483	1024	2964	1489	1732	1574	22285	2063	2109	3306	13735	49626	214
Non-AGP Households	All HHs	Mean	601	333	946	538	238	633	994	135	621	191	489	6046	56
		Median	145	0	183	0	0	248	1824	0	0	16	574	379	0
		SD	5565	1656	3407	1544	1431	1854	67215	2735	3157	1987	16996	34176	302
	Female HHHs	Mean	432	273	693	162	139	578	720	212	589	375	714	6065	55
		Median	0	0	0	0	0	0	577	0	0	0	63	0	0
		SD	1196	572	1353	505	364	3560	768	669	1626	1561	2664	13634	174
	Male HHHs	Mean	669	312	1073	595	278	606	1001	122	684	127	421	5816	58
		Median	136	0	0	0	0	0	461	0	0	8	98	0	0
		SD	1604	756	2777	1760	1145	1025	1605	569	2087	339	684	15033	177
	Mature HHHs	Mean	653	285	835	422	147	629	879	130	600	240	479	6641	59
		Median	93	0	0	0	0	0	503	0	0	0	63	0	0
		SD	1782	699	2201	1456	436	2423	1374	490	1829	1045	1658	16487	181
	Youth HHHs	Mean	527	330	1211	543	411	540	1014	185	769	101	508	4424	52
		Median	0	0	0	0	0	0	625	0	0	7	197	0	0
		SD	834	727	2907	1603	1557	941	1559	781	2208	241	727	10216	166

Source: Authors' calculation based on AGP baseline survey, 2011.

Note: 'HHs' and 'HHHs' stand respectively for Households' and 'Headed households'. 'SD' stands for 'Standard Deviation'.

Except for maize, the average crop revenue of AGP woredas appeared higher than that of the non-AGP woredas (Table 6.3.b). Within AGP woredas, male headed households reported to have higher revenue for all the crop categories except for enset (for which the average small revenue is comparable across gender categories). However, the result is more mixed and there is no pronounced gap across age categories. A similar pattern is observed within non-AGP woredas. Comparing AGP and non-AGP woredas across gender and age categories reveals the following. Similar to the result for all households, male headed households in AGP woredas generated higher revenue from all crops (even for maize) than in non-AGP woredas. The same holds for female headed households with the exception that those in AGP woredas earned less revenue for coffee, fruit crops, and root crops than their counterparts in non-AGP woredas. The general pattern of higher revenues for AGP households holds also for both age groups, with the exception that mature headed households in AGP woredas generated less revenue from coffee and fruit crops than those in non-AGP woredas, and that young headed households in AGP woredas generated less revenue for root crops than those in non-AGP woredas. Tables 6.3.a and 6.3.b discussed the average household revenue from crop sales for those households who sold the different crop types. For further analysis, we look into the average revenue from each crop type for an average household (Table 6.4). In other words, households which did not sell a certain crop type are considered to have zero revenue from that crop. From such computation, we find that the average revenue an average household obtains from the sales of crops is about 3,469 ETB. Coffee is the most important crop in total crop sales, accounting for 38 percent of the total. Wheat is the second most important contributor to total crop sales and the most important crop in cereal sales. The fact that coffee is the highest contributor to total revenue holds true to households in both AGP and non-AGP woredas. This significant contribution is due to the high price of coffee in the market relative to the price of other crops. Although the average contribution of coffee to total sales is high, the percentage of households that actually sell coffee is relatively small at 10.4 percent (Annex Table B.6.3). Wheat, the second most important crop in total crop revenue, is sold by about 15 percent of the households. The marketing of coffee is also mainly concentrated in Oromiya and SNNP regions (Annex Tables B.6.3 and B.6.4).

Table 6.4. Average household revenue from crop sales and percentage share by crop class, by AGP status, household categories, and crop types [for all households]

Group	Category	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset	Total
National	All HHs (ETB)	264	106	320	246	60	260	283	35	121	14	120	1,309	11	3,469
	Proportion (%)	7.6	3.1	9.2	7.1	1.7	7.5	8.1	1.0	3.5	0.4	3.4	37.7	0.3	100
	Female HHs (ETB)	149	82	202	106	32	220	111	29	98	20	100	1,146	11	2,650
	Proportion (%)	5.6	3.1	7.6	4.0	1.2	8.3	4.2	1.1	3.7	0.8	3.8	43.2	0.4	100
	Male HHHs (ETB)	312	116	370	304	71	277	355	38	131	12	128	1,377	12	3,813
	Proportion (%)	8.2	3.0	9.7	8.0	1.9	7.3	9.3	1.0	3.4	0.3	3.4	36.1	0.3	100
	Mature HHHs (ETB)	288	102	286	237	46	288	311	37	125	16	132	1,457	12	3,624
	Proportion (%)	8.0	2.8	7.9	6.5	1.3	7.9	8.6	1.0	3.5	0.4	3.7	40.2	0.3	100
	Youth HHHs (ETB)	222	114	378	261	83	212	235	32	114	12	98	1,057	10	3,204
	Proportion (%)	6.9	3.6	11.8	8.1	2.6	6.6	7.3	1.0	3.6	0.4	3.1	33.0	0.3	100
AGP woreda	All HHs (ETB)	427	132	404	249	107	284	881	113	137	17	420	1,150	18	4,637
	Proportion (%)	9.2	2.8	8.7	5.4	2.3	6.1	19.0	2.4	3.0	0.4	9.1	24.8	0.4	100
	Female HHs (ETB)	191	103	238	195	44	243	242	58	79	7	271	1,059	17	3,427
	Proportion (%)	5.6	3.0	7.0	5.7	1.3	7.1	7.1	1.7	2.3	0.2	7.9	30.9	0.5	100
	Male HHHs (ETB)	463	171	424	428	106	328	959	106	145	17	376	1,434	17	5,690
	Proportion (%)	8.1	3.0	7.4	7.5	1.9	5.8	16.9	1.9	2.5	0.3	6.6	25.2	0.3	100
	Mature HHHs (ETB)	417	146	354	366	83	342	870	100	147	7	386	1,259	18	5,049
	Proportion (%)	8.3	2.9	7.0	7.3	1.7	6.8	17.2	2.0	2.9	0.1	7.6	24.9	0.4	100
	Youth HHHs (ETB)	327	160	396	351	96	238	545	77	90	27	276	1,438	16	5,000
	Proportion (%)	6.5	3.2	7.9	7.0	1.9	4.8	10.9	1.5	1.8	0.5	5.5	28.8	0.3	100
Non-AGP woreda	All HHs (ETB)	214	98	294	245	45	252	98	11	116	14	27	1,358	9	3,109
	Proportion (%)	6.9	3.2	9.5	7.9	1.5	8.1	3.2	0.4	3.7	0.4	0.9	43.7	0.3	100
	Female HHs (ETB)	133	74	187	70	28	211	60	17	106	25	33	1,180	9	2,345
	Proportion (%)	5.7	3.2	8.0	3.0	1.2	9.0	2.6	0.7	4.5	1.1	1.4	50.3	0.4	100
	Male HHHs (ETB)	251	94	348	254	57	256	110	11	125	10	27	1,354	9	3,054
	Proportion (%)	8.2	3.1	11.4	8.3	1.9	8.4	3.6	0.4	4.1	0.3	0.9	44.4	0.3	100
	Mature HHHs (ETB)	237	84	259	184	31	266	86	12	116	19	30	1,537	10	3,051
	Proportion (%)	7.8	2.7	8.5	6.0	1.0	8.7	2.8	0.4	3.8	0.6	1.0	50.4	0.3	100
	Youth HHHs (ETB)	181	96	371	225	77	202	111	14	124	7	27	906	7	2,490
	Proportion (%)	7.3	3.8	14.9	9.1	3.1	8.1	4.5	0.6	5.0	0.3	1.1	36.4	0.3	100

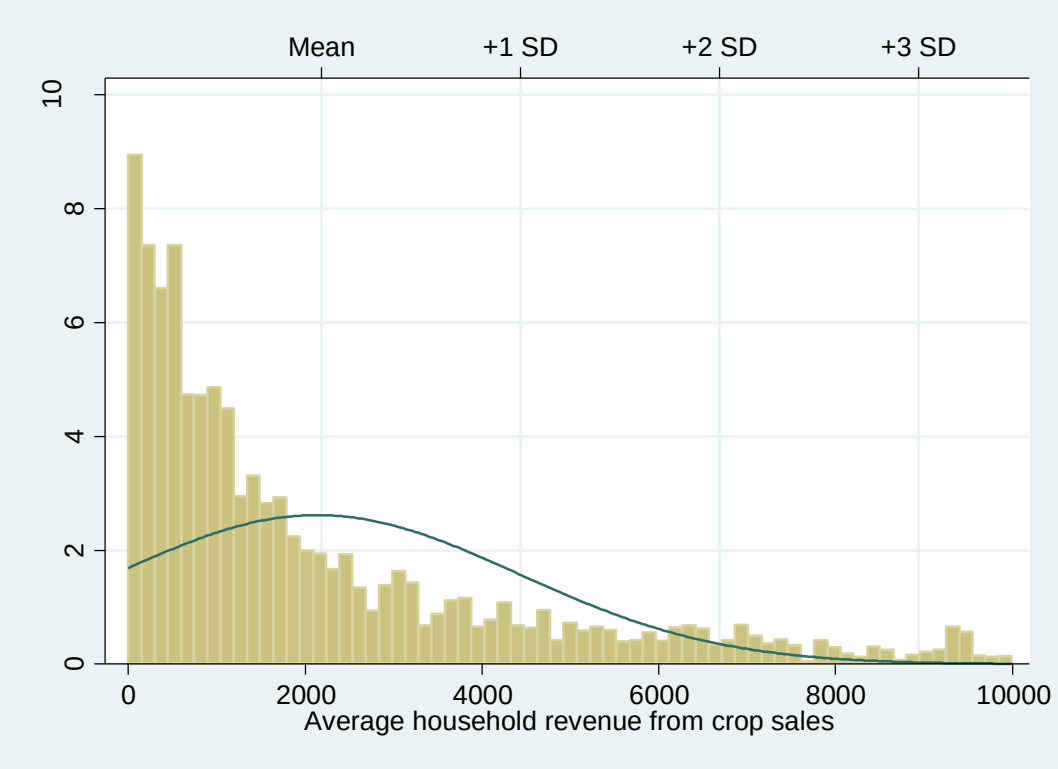
Source: Authors' calculation based on AGP baseline survey, 2011.

Notes: 'HHs' and 'HHHs' stand respectively for 'Households' and 'Headed Households'. The percentage share of the average revenue from the indicated crop categories does not add up to 100 as 'other crops' category is excluded.

Distribution of Average Household Revenue

Figure 6.1 provides an overview of the variation of revenue from crop sales among households that actually sold crops. The figure shows that he large majority of households earned much less revenue than the average income of 4,826 ETB, which had a large standard deviation of 12,191 ETB. To be specific, about one-half of the households earned 597 ETB or less, more than 80 percent earned less than the average revenue, while the upper 5 percent of households earned 14,458 ETB or more. This shows that the average revenue is largely dictated by crop sales revenue earned by a relatively small proportion of the households.

Figure 6.1. Variation of revenue from crop sales among households that actually sold crops



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Crop Transportation Costs and Marketing Mechanisms

It is estimated that households paid about 2.2 percent of their total revenue obtained from crop sales for transportation (Table 6.5). This proportion was smaller among pulses and fruit crops growers that sold the crops at relatively higher prices and for those farmers that often sell their products at the local market. The rate of transportation paid by vegetables growers was the largest at 9 percent of their revenue and much larger than the next highest transportation cost of 3.8 percent of the revenue of chat growers. This may partly be explained by the special care needed to transport vegetables as well as the time sensitiveness of the produce. Other crop

types with transportation costs in excess of 1 percent of total sales revenue include root crops (3.2 percent), coffee (2.2 percent), enset (2.2 percent), barley (1.8 percent), and maize (1.7 percent). Note that in addition to the type of crop involved, transportation costs may increase depending on the location of households relative to marketing centres; and importantly on whether or not transport operators have to collect the produce from locations relatively close to each other.

Table 6.5. Percentage of total crop sales' revenue used for transportation, by AGP status, household categories, and crop type

Group	Category	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
National	All HHs	1.0	1.8	1.0	1.7	1.0	0.5	0.9	9.0	3.2	0.5	3.8	2.2	2.2
	Female HHHs	1.0	0.9	0.7	1.5	0.9	0.5	0.7	1.1	1.0	0.8	4.8	1.2	2.5
	Male HHHs	1.0	2.1	1.1	1.7	1.0	0.6	0.9	9.9	3.9	0.4	3.5	2.6	2.1
	Mature HHHs	0.9	2.3	1.1	1.7	0.9	0.5	0.9	1.0	4.7	0.4	4.1	0.8	2.5
	Youth HHHs	1.1	0.9	1.0	1.6	1.2	0.7	0.9	12.7	0.8	0.7	3.3	6.5	1.7
AGP woredas	All HHs	0.5	1.3	0.4	1.4	1.6	0.5	1.2	0.7	9.5	0.5	2.6	0.5	1.8
	Female HHHs	0.4	1.1	0.5	0.9	2.3	0.5	1.0	0.3	0.9	0.6	3.0	0.5	1.2
	Male HHHs	0.4	0.9	0.4	1.0	1.5	0.3	1.3	0.7	9.3	0.5	2.5	0.5	2.0
	Mature HHHs	0.4	1.2	0.4	0.9	1.8	0.4	1.3	0.6	10.5	0.7	2.6	0.4	1.9
	Youth HHHs	0.5	0.5	0.5	1.2	1.2	0.3	1.1	0.7	1.6	0.1	2.7	0.6	1.4
Non-AGP woredas	All HHs	1.3	2.0	1.4	1.7	0.6	0.6	0.4	13.3	1.2	0.5	5.1	2.7	2.4
	Female HHHs	1.5	0.7	0.9	1.8	0.1	0.5	0.2	2.1	1.0	0.9	6.4	1.5	3.3
	Male HHHs	1.3	2.7	1.6	2.2	0.7	0.7	0.4	14.3	1.3	0.4	4.7	3.8	2.1
	Mature HHHs	1.3	2.7	1.6	2.2	0.3	0.5	0.2	2.1	1.7	0.3	5.7	1.0	2.8
	Youth HHHs	1.6	1.2	1.3	2.1	1.2	0.8	0.6	15.3	0.6	1.0	3.9	11.5	1.8

Source: Authors' calculation based on AGP baseline survey, 2011.
Note: 'HHs' and 'HHHs' stand respectively for 'Households' and Headed households'.

Female headed households on average paid 1.4 percent of their crop revenues for transportation, which is about 40 percent lower than the proportion paid by male headed households. The average transportation cost of households was inversely related to the age categories of the heads. While households with mature heads paid 1.7 percent of their revenue on transportation cost, the corresponding figure for households with young heads was 2.5 percent. Households in non-AGP woredas — which dominantly produce crops costly to transport — on average paid 2.5 percent of their sales revenue, which is about 48 percent larger than the 1.7 percent average paid by households in AGP woredas. The finding that the transportation cost of male headed households and households with young heads exceeds that of their corresponding counterparts holds for both AGP and non-AGP woredas.

The majority households reported to have sold their output to a private trader in the village or local market, which is what the "Buyer Type I" stands for in the "Major buyer" row of Table 6.6. Similarly, the majority of the sellers chose the selected buyer for immediate payment reasons, which is what "immediate pay" stands for in the "Reason to choose buyer" row. The remaining relatively smaller proportion of households chose their buyer because he/she pays a high price, and most of the households that chose their buyer because of this reason sold oilseeds. We did not include the major buyer and reasons for choosing that buyer for all categories (age, gender, and spatial disaggregation) considered in this report in the table because the first choice of buyer is the same for all categories and the reason for the choice varied only slightly.

It is interesting to note that households producing the most marketed output, i.e. oilseeds, and thus are relatively well integrated into the market system can afford to wait relatively longer or look for a buyer that is willing to pay higher prices. While all households seem to choose traders over other buyers, most of which are in the local market, the overwhelming majority that are less integrated to the market chose the buyer with the explicit purpose to get paid immediately. Whether or not the private trader pays the highest price needs further study. However, the sellers' perception is crucial in their decision to whom to sell and it seems to imply that their immediate need of the money is more important than any other reason.

Only a small proportion of households use mobile phones to communicate with buyers (Table 6.7). This ranged from a rare use of mobile phones among fruit sellers to 11.6 percent for chat sellers. However, it is interesting to note that among those that use mobile phones the largest proportion agree on prices over the phone. This result is an important consideration for policy makers. The lowest proportion is for root crop growers; only 58 percent of the households selling root crops that used mobile phones agreed on prices on the phone. Next to chat sellers, vegetable sellers and oil seed sellers are the second and third largest in using mobile phones in crop sale transactions; however, these proportions are already small with only 4 percent of the households selling these crops, though, those using the mobile phone in transactions mostly agree on prices over the phone. While coffee is the most important crop in total crop sales, the proportion of coffee selling households using the mobile phone for transactions is very low (0.9 percent). This may have to do with the coffee price information that ECX provides.

Table 6.6. Major buyers and major reasons for sellers' choice of buyers, by AGP status, household categories, and crop type [for households who sold these crops]

Group	Category	Variable	Cereals	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
National	All HHs	Major buyer	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I
		Reasons to choose buyer	immediate pay	immediate pay	higher price	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay
	Female HHHs	Major buyer	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I
		Reasons to choose buyer	immediate pay	immediate pay	higher price	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay
	Male HHHs	Major buyer	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I
		Reasons to choose buyer	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay
	Mature HHHs	Major buyer	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I
		Reasons to choose buyer	immediate pay	immediate pay	higher price	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay
	Youth HHHs	Major buyer	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I
		Reasons to choose buyer	immediate pay	immediate pay	higher price	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay
AGP woredas	All HHs	Major buyer	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type II	Buyer Type I	Buyer Type I	Buyer Type I
		Reasons to choose buyer	immediate pay	higher price	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay
Non-AGP woredas	All HHs	Major buyer	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I
		Reasons to choose buyer	immediate pay	immediate pay	higher price	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay

Source: Authors' calculation based on AGP baseline survey, 2011.
Note: 'HHs' and 'HHHs' stand respectively for 'Households' and Headed households'. 'Buyer Type I' and 'Buyer Type II' respectively stand for 'Private trader in the village or local market' and 'Consumer buying in the village or local market'.

Table 6.7. Proportion of households that used mobile phones in crop sale transaction and that agreed prices over the mobile phone, if used, by AGP status, household categories, and crop type [for households who sold these crops]

Group	Category	Variable	Cereals	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
National	All HHs	Mobile use in crop sale (%)	2.2	1.9	3.8	3.9	2.6	0.1	11.6	0.9	2.5
		Agreed price over mobile (%)	90.7	82.6	99.5	97.0	58.3	0.0	87.6	100	100
	Female HHHs	Mobile use in crop sale (%)	1.4	1.2	2.0	0.8	4.8	0.0	7.6	0.0	3.1
		Agreed price over mobile (%)	98.2	66.9	96.3	100	37.1		100.0		100
	Male HHHs	Mobile use in crop sale (%)	2.4	2.2	4.3	4.9	1.8	0.1	12.9	1.3	2.2
		Agreed price over mobile (%)	89.3	85.3	100	96.8	78.1	0.0	85.1	100	100
	Mature HHHs	Mobile use in crop sale (%)	2.0	2.1	4.3	0.7	3.7	0.0	9.6	1.1	3.8
		Agreed price over mobile (%)	98.1	91.1	100	83.5	55.7		99.5	100	100
	Youth HHHs	Mobile use in crop sale (%)	2.5	1.7	2.9	8.4	0.7	0.2	15.3	0.4	0.0
		Agreed price over mobile (%)	80.8	65.2	98.4	98.5	81.6	0.0	73.4	100	
AGP woredas	All HHs	Mobile use in crop sale (%)	2.1	3.9	1.9	0.9	4.2	0.3	1.1	0.6	1.3
		Agreed price over mobile (%)	82.7	76.0	97.2	100	92.9	0.0	91.1	100	100
Non-AGP woredas	All HHs	Mobile use in crop sale (%)	2.2	1.2	4.7	6.0	2.0	0.0	16.0	1.0	3.1
		Agreed price over mobile (%)	95.2	89.8	100	96.6	29.8		87.5	100	100

Source: Authors' calculation based on AGP baseline survey, 2011.
Note: 'HHs' and 'HHHs' stand respectively for 'Households' and 'Headed households'.

6.2. Livestock Marketing

The households in the four regions included in the AGP survey practice a mixed crop-livestock production system. These regions also account for a large majority of the livestock population in the country. As discussed in Chapter 2, livestock is an important part of household assets, which is monetized when households sell their livestock in times of need. Households also benefit from the flow of outputs that their stock provides in the form of milk and dairy products, eggs, and hides and skins. Moreover, the services cattle provide in ploughing the land is a crucial input in crop production. This section deals with livestock sales focusing on revenue generated and marketing mechanisms. The first subsection deals with livestock revenue while the second deals with transportation costs and marketing mechanisms.

Revenues from Livestock Sales

The revenue from livestock sales for an average household in the survey makes up to 1,344 ETB in the year prior to the survey (Table 6.8). Revenue from sales income from livestock constitutes 38 percent of the revenue from crop sales. Within the sales of livestock, it is especially the sales of cattle which are important as they account for 77 percent of the total sales. Second come the sales of goats and sheep accounting for 13 percent of total livestock sales income. Pack animals and chickens each count for 5 percent of total sales income.

The numbers in Table 6.8 further indicate that households with male heads generated 34 percent more income from all livestock sales than female headed households. When we compare this for the different livestock categories, we note that male headed households, compared to female headed households, earn 49 percent more income from cattle sales, 32 percent more from sheep and goats, and 334 percent more from pack animals. In contrast, female headed households generated 385 percent more from chicken sales. Relative to households with young heads, those with mature heads earned more income from the sales of all livestock types (with the exception of sheep and goats and camels). Mature headed households earned 8, 65, and 132 percent more relative to households with young heads from the sales of cattle, pack animals, and chickens, respectively, while the average revenue collected from the sale of sheep and goats is comparable. As a result of this, total livestock earning of mature headed households was 12.3 percent larger relative to that of households with young heads. On average, households in AGP woredas earned 801 ETB from cattle sales, which was 28 percent lower relative to the mean revenue of 1,111 ETB obtained by households in non-AGP woredas. For all livestock types, the revenues are smaller for households in

AGP woredas compared to those in non-AGP woredas.

Table 6.8. Average and proportion of revenue collected from sale of livestock products, by household category, AGP status, and livestock type

Category	Statistics	Cattle	Sheep & goats	Pack animals	Chickens	Total
All Households	Average Revenue (ETB)	1,037	177	64	64	1,344
	Proportion (%)	77	13	5	5	100
Female headed Households	Average Revenue (ETB)	768	144	19	148	1,080
	Proportion (%)	71	13	2	14	100
Male headed Households	Average Revenue (ETB)	1,144	190	82	31	1,449
	Proportion (%)	79	13	6	2	100
Mature headed Households	Average Revenue (ETB)	1,066	177	75	81	1,401
	Proportion (%)	76	13	5	6	100
Youth headed Households	Average Revenue (ETB)	987	176	45	35	1,248
	Proportion (%)	79	14	4	3	100
AGP woredas	Average Revenue (ETB)	801	155	49	30	1,044
	Proportion (%)	77	15	5	3	100
Non-AGP woredas	Average Revenue (ETB)	1,111	184	69	75	1,438
	Proportion (%)	77	13	5	5	100

Source: Authors' calculation based on AGP baseline survey, 2011.

Livestock Transportation Costs and Marketing Mechanisms

One of the most commonly cited reasons for low monetization and productivity of the livestock sector is poor infrastructure such as roads and telecommunication. In this subsection, we describe the cost of transportation, the intensity of mobile use in livestock marketing, and its role in price determination. A description about households' main livestock buyers in the survey areas and the main reasons for their choices of the buyers is also included. To directly link transportation cost to the amount generated from the sale of livestock, we focus here on the proportion of revenue paid for transportation, which we summarize in Table 6.9. Caution is in order in interpreting the magnitude of this variable. A transportation cost that is a smaller proportion of total revenue does not necessarily imply that the market is closer. Whenever roads or transportation means are not available, farmers have to travel to the market places on foot and the opportunity cost of time is not included in this analysis.

Table 6.9 shows that households paid an average of about 0.3 percent of their total revenue obtained from livestock sales for transportation. This ranges from nearly 0.1 percent for pack animals to 0.5 percent for chickens. Compared to the proportion of total revenue spent on

transporting crops, this is smaller as households often trek with their cattle to markets as opposed to crops that have to be transported. The latter also partially explains the relatively higher transportation cost of chickens.

Female headed households on average spent 0.1 percent of the revenue they generated from livestock sales on transportation, while male headed households on average paid 0.3 percent. Recall that also in the case of crops transportation fares accounted for a larger proportion of total revenue for male headed households than for female headed households. It also seems that, on average, transportation cost relative to revenue was slightly higher for households with younger heads compared the households with mature heads. Households in non-AGP woredas paid on average 0.3 percent of their sales revenue on transportation which ranges from 0.1 percent on pack animals to 0.8 percent on chicken. As is shown in Table 6.9, the proportion of revenue spent on transporting livestock is higher for all livestock categories in non-AGP woredas than in AGP woredas where households on average paid about 0.1 percent of their revenue for transportation.

Table 6.9. Proportion of revenue paid for transportation, by household and livestock category and AGP status

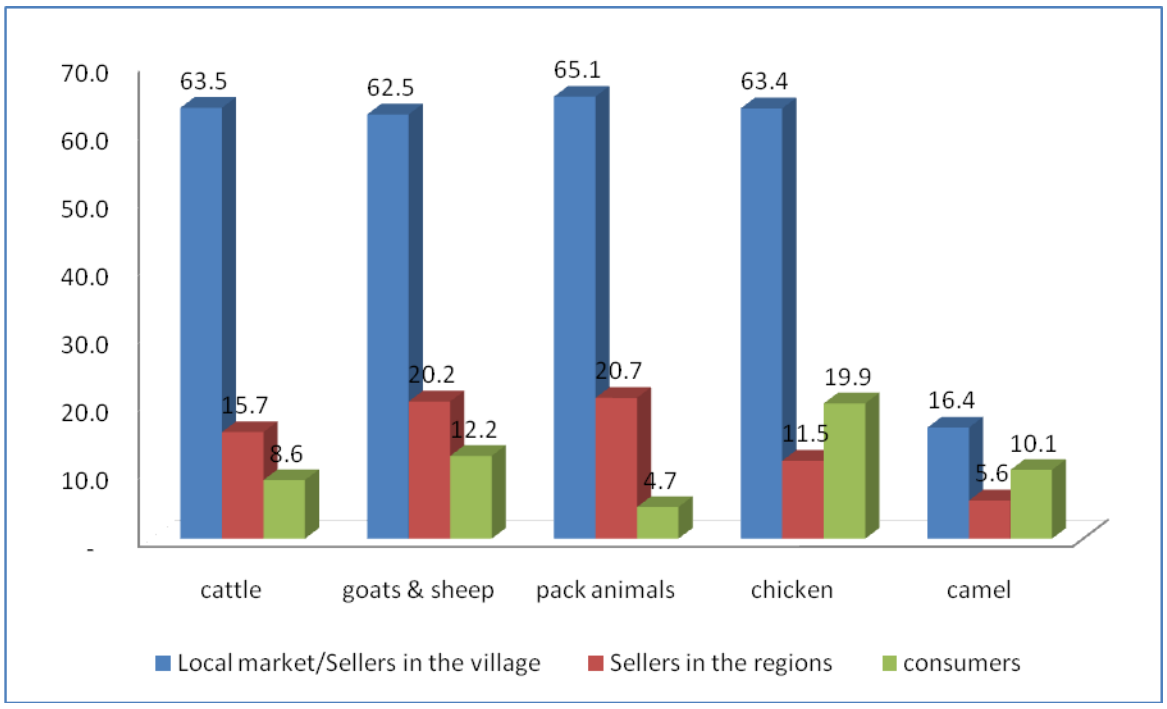
Category	Cattle	Sheep & goats	Pack animals	Chickens
All Households	0.3	0.2	0.1	0.5
Female headed Households	0.1	0.1	0.1	0.5
Male headed Households	0.3	0.3	0.1	0.5
Mature headed Households	0.1	0.2	0.1	0.7
Youth headed Households	0.5	0.3	0.0	0.2
AGP woredas	0.1	0.1	0.1	0.1
Non-AGP woredas	0.3	0.3	0.1	0.8

Source: Authors' calculation based on AGP baseline survey, 2011.

Local markets or buyers/consumers in the village were the major destinations for households' livestock sales followed by buyers/sellers in the region and local consumers. Figure 6.2 shows that these three buyers jointly accounted for more than 85 percent of the total sales for all livestock categories, except camels.[16] This was consistent across livestock groups, household categories, and AGP and non-AGP woredas.

[16] For camels, the major buyers were not clearly identified in the survey.

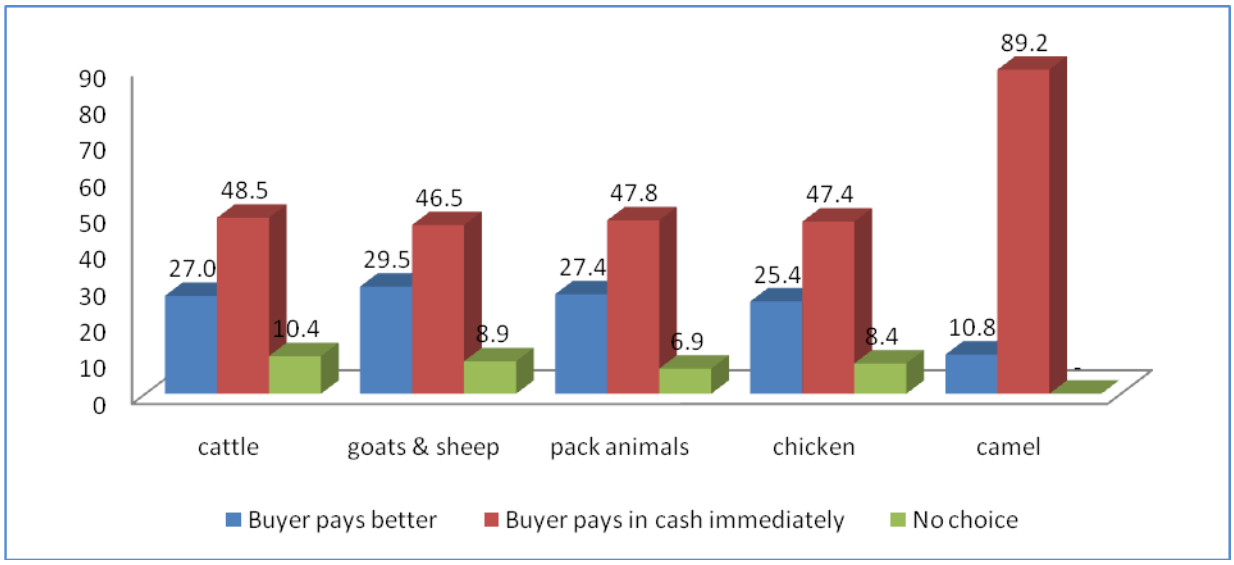
Figure 6.2. The three largest buyers and their corresponding shares from total sales (%)



Source: Authors' calculations using data from the AGP Baseline Survey, 2011.

A summary of the three important reasons why households chose these buyers is provided in Figure 6.3. The most important criterion for households' choice of livestock buyers is that they pay immediately in cash while the second reason is that the buyers pay a higher price. The third reason is that these buyers were the only available ones and households did not have any other choice. These three reasons accounted for more than 80 percent of the factors that determined the sellers' choice of buyers.

Figure 6.3. The three most important reasons for sellers' choice of buyer and their corresponding shares (%)



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Though mobile phone usage has considerably increased in the country, its usage to facilitate livestock sales transactions is limited. Table 6.10 summarizes the proportion of households that used mobile phone to contact their buyers and the proportion that agreed on a price over the phone from those reported to have used a mobile phone in transactions. The numbers in the table indicate that only 0.8 percent of the total sample used a mobile phone in livestock sales. This differs among different livestock categories with 0.1 percent for chicken and sheep and goats, 1.3 percent for cattle, and 4.3 percent for pack animals. It is, however, important to note that among those that used mobile phone to contact their buyers, about 54 percent agreed on a price over the phone.

Table 6.10. Proportion of households that used mobile phone for livestock sales transaction and those that agreed on a price on the phone, if used, by household categories, AGP status, and livestock categories

Group	Category	Variable	Cattle	Sheep & goats	Pack animals	Chickens
National	All HHs	Mobile use in sale (%)	1.3	0.1	4.3	0.1
		Agreed price over mobile (%)	56.6	43.5	49.6	56.7
	Female HHHs	Mobile use in sale (%)	0.3	0.2	1.1	0.0
		Agreed price over mobile (%)	39.1	48.4	0.0	100
	Male HHHs	Mobile use in sale (%)	1.6	0.1	4.9	0.1
		Agreed price over mobile (%)	57.7	41.9	51.5	51.4
	Mature HHHs	Mobile use in sale (%)	1.5	0.2	4.0	0.1
		Agreed price over mobile (%)	69.2	58.1	81.4	100
	Youth HHHs	Mobile use in sale (%)	1.1	0.1	4.8	0.1
		Agreed price over mobile (%)	24.3	0.0	7.2	0.0
AGP woredas	All HHs	Mobile use in sale (%)	1.3	0.6	5.1	0.3
		Agreed price over mobile (%)	43.2	43.5	22.8	56.7
Non-AGP woredas	All HHs	Mobile use in sale (%)	1.4	0.0	4.1	0.0
		Agreed price over mobile (%)	62.2		59.8	56.7

Source: Authors' calculation based on AGP baseline survey, 2011.
Note: 'HHs' and 'HHHs' stand respectively for 'Households' and 'Headed households'.

Comparing the sub-samples, a larger proportion of male headed households used the mobile phone, which held true across all livestock categories, and they agreed more frequently on a sales price over the phone relative to female headed households, except for goats and sheep. Interestingly, on average, the use of mobile phones in livestock transactions is a little more common among households with young heads than those with mature heads. This probably suggests that households with younger heads are relatively more attracted to modern ways of doing business.

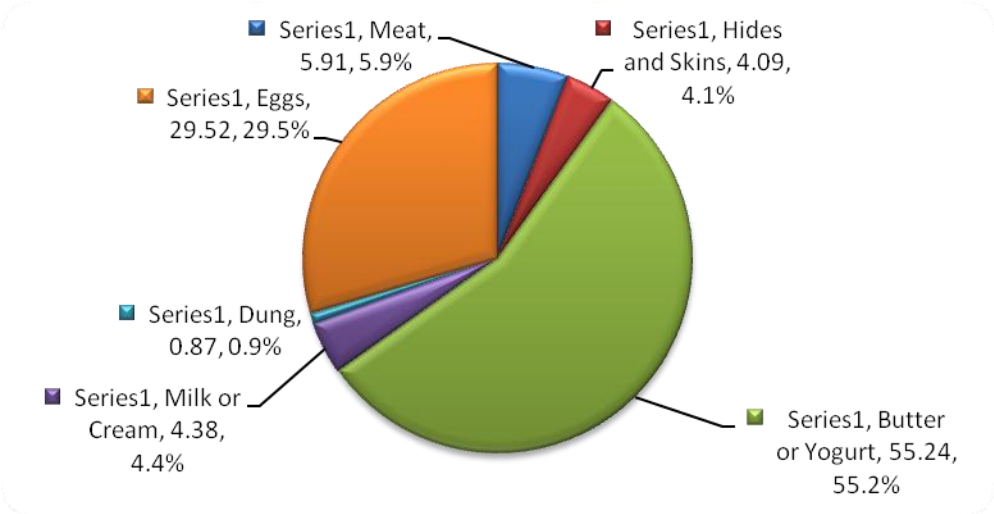
In AGP woredas, the proportion of households that used mobile phone to contact buyers was 1.1 percent. This is slightly higher than the 0.8 percent mobile usage in households in non-AGP woredas. On the other hand, while about 40 percent of those who had contact with buyers agreed price over the phone in AGP woredas, a relatively larger proportion of 62 percent agreed prices in non-AGP woredas.

Revenues from Livestock Products

In this part, we briefly describe the revenues generated from livestock products. The livestock products covered in the survey are meat (excluding the sale of live animals), hides/skins, butter/yoghurt, eggs, milk/cream, and dung. For the 12 months prior to the survey, an average

household earned sales revenue from these products for the amount of 155 ETB. Table 6.11 and Figure 6.4 depict that butter and yoghurt accounted for the largest share (55.2 percent of the total) while eggs, meat, milk & cream, hides & skins, and dung respectively contributed 29.5, 5.9, 4.4, 4.1, and 0.9 percent.

Figure 6.4. Distribution of revenue from livestock products (percent)



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

In Table 6.11 we summarize average household revenue generated from livestock products sales and the contribution of each type of livestock product. An average household in the surveyed woredas earned 86 ETB from butter or yoghurt sales, which is by far the largest, followed by 46 ETB from eggs sales. Revenue accrued to an average household from the sale of all other items was less than 10 ETB, ranging from 9 ETB from meat to 1 ETB from dung. Mature headed households generated a larger proportion of total revenue from livestock products sales as compared to households with young heads. But more interestingly, an average female headed household earned more from the sale of livestock products relative to households with male heads. Although male headed households earned more from the sales of meat, hides and skins, and milk or cream than their female counterparts, female headed households earned a lot more from the sales of eggs and butter and yoghurt. An average household in non-AGP woredas earned 157 ETB, which was 4.6 percent higher than the average for a household in AGP woredas, which earned 150 ETB from livestock products sales.

Table 6.11. Average revenue and share of different categories in total revenue of livestock products

Category	Statistics	Meat	Hides & skins	Butter or yoghurt	Milk or cream	Dung	Eggs	Total
All HHs	**Average Revenue (ETB)**	9.2	6.3	85.8	6.8	1.4	45.8	155
	Proportion (%)	5.9	4.1	55.2	4.4	0.9	29.5	
Female HHHs	**Average Revenue (ETB)**	4.4	3.2	96.0	4.5	0.9	53.9	163
	Proportion (%)	2.7	2.0	59.0	2.7	0.5	33.1	
Male HHHs	**Average Revenue (ETB)**	11.2	7.7	81.4	7.8	1.6	42.4	152
	Proportion (%)	7.4	5.1	53.5	5.1	1.0	27.9	
Mature HHHs	**Average Revenue (ETB)**	9.5	7.4	109.8	7.1	1.6	47.2	183
	Proportion (%)	5.2	4.0	60.1	3.9	0.9	25.9	
Youth HHHs	**Average Revenue (ETB)**	8.6	4.5	41.6	6.2	0.9	43.3	105
	Proportion (%)	8.2	4.3	39.6	5.9	0.9	41.3	
AGP woredas	**Average Revenue (ETB)**	10.3	9.6	71.6	24.7	2.5	31.4	150
	Proportion (%)	6.9	6.4	47.7	16.5	1.7	20.9	
Non-AGP woredas	**Average Revenue (ETB)**	8.8	5.3	90.2	1.2	1.0	50.4	157
	Proportion (%)	5.6	3.4	57.5	0.8	0.6	32.1	

Source: Authors' calculation based on AGP baseline survey, 2011.
Note: 'HHs' and 'HHHs' stand respectively for 'Households' and 'Headed households'.

6.3. Dairy Marketing

Table 6.12 shows that households that sell dairy products had to travel about 52 minutes on average to a market place. For those that paid transportation costs, this translates into 1.1 percent of total revenue, on average. The disaggregated figures show that the proportion of total revenue spent on transportation is consistently and notably lower for female headed households, relative to the male headed households, regardless of the distance they travel to the market place. For non-AGP woredas, the average travel time to the market place was 55 minutes ranging from 43 minutes for yoghurt to 69 minutes for butter. The corresponding share of transportation costs to total revenue averages 2 percent. On the other hand, for AGP woredas, the average distance to the market place was about 42 minutes with the proportion paid for transportation costs amounting to about 0.5 percent.

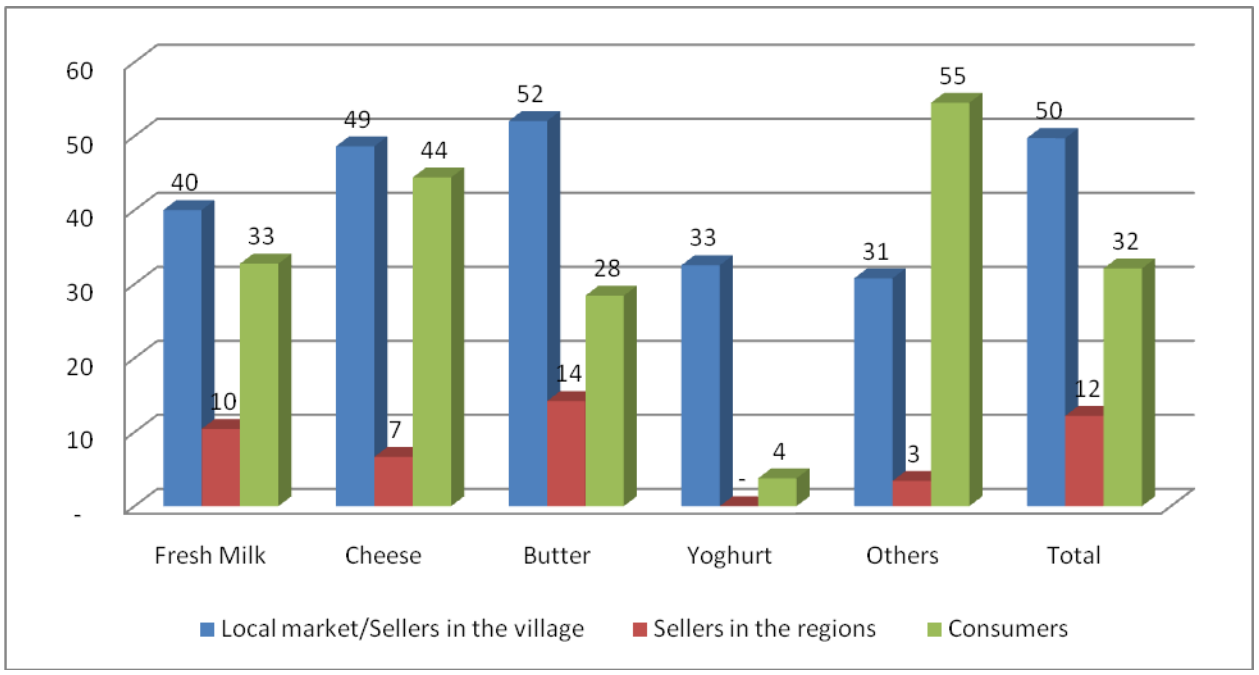
Table 6.12. Average travel time to the market place and proportion of revenue paid for transportation, by household category and AGP status

Category	Statistics	Fresh milk	Cheese	Butter	Yoghurt
All HHs	Proportion paid for transportation (%)	1.4	2.4	0.7	0.0
	Average travel time to market (minutes)	50.0	48.6	65.4	43.4
Female HHHs	Proportion paid for transportation (%)	0.7	0.5	0.4	0.0
	Average travel time to market (minutes)	62.5	48.4	63.0	40.0
Male HHHs	Proportion paid for transportation (%)	1.6	3.6	0.8	0.0
	Average travel time to market (minutes)	45.7	48.7	66.5	48.6
Mature HHHs	Proportion paid for transportation (%)	0.3	2.1	0.7	0.0
	Average travel time to market (minutes)	45.6	49.0	66.3	38.1
Youth HHHs	Proportion paid for transportation (%)	3.2	3.1	0.7	0.0
	Average travel time to market (minutes)	55.0	47.8	64.0	52.7
AGP woredas	Proportion paid for transportation (%)	0.9	0.6	0.4	0.0
	Average travel time to market (minutes)	29.4	41.5	51.8	45.9
Non-AGP woredas	Proportion paid for transportation (%)	1.6	3.2	0.9	0.0
	Average travel time to market (minutes)	55.1	51.0	69.1	43.0

Source: Authors' calculation based on AGP baseline survey, 2011.
Note: 'HHs' and 'HHHs' stand respectively for 'Households' and 'Headed Households'.

Analogous to livestock and crops, local markets or buyers/consumers in the village, buyers/sellers in the region, and local consumers were the major buyers of dairy products. Figure 6.5 summarizes the proportion by the three buyers in each type and in total. It shows that the three buyers jointly counted for about 94 percent and local markets alone command about one half of the total market of dairy products. Consumers and regional traders rank second and third with an average share of 32.1 percent and 12.2 percent, respectively. By and large, this is the pattern for all types of dairy products and for all demographic and spatial categories considered in this report.

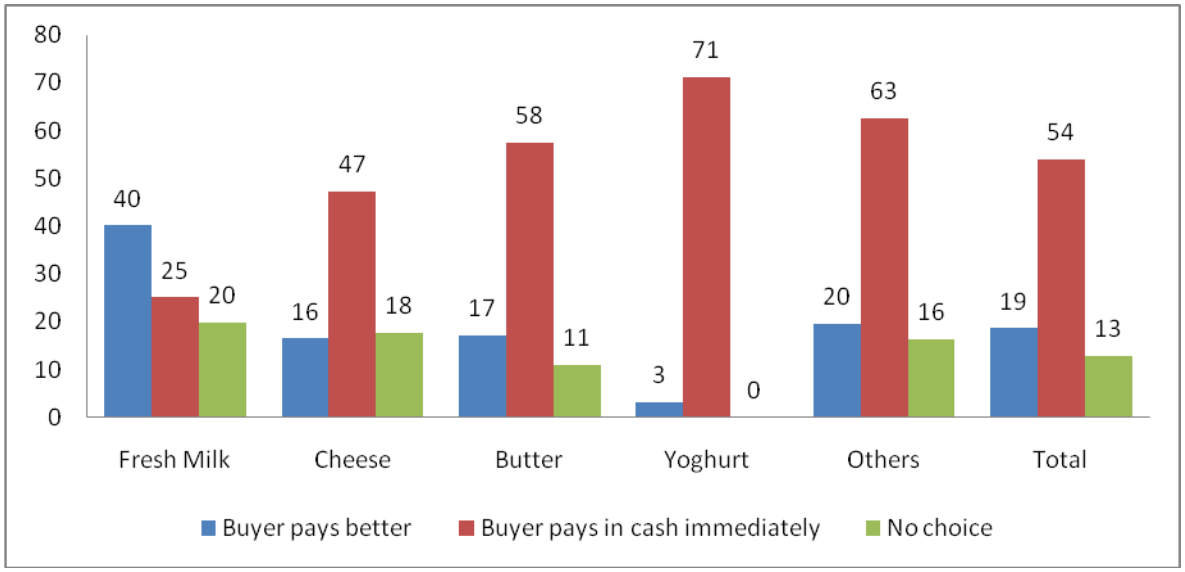
Figure 6.5. The three largest buyers of dairy products and their share from total sales



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Similar to the case of crops and livestock in general, the major reasons for the households' choice of buyers are 'pay immediately' and 'pay better/higher prices' (see Figure 6.6). The figure also indicates that sizable proportions of the households do not have alternative buyers to choose from.

Figure 6.6. The three most important reasons for choices of dairy product buyers and their respective share



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

6.4. Summary

Sales income. Combining sales revenue from three sources (crops, livestock, and livestock products), it is found that total sales income for an average household in the survey area over a 12 month period amounts to 4,968 ETB. The majority of the sales revenue is made up from crop sales, as this category accounts for 70 percent of the sales income of the average household (3,469 ETB). Second comes the revenue from the sales of livestock, making up 26 percent of the sales income (1,344 ETB). Sales revenue from livestock products (meat, hides and skins, milk, cheese, butter, yoghurt, dung, and eggs) are estimated to be relatively less important as they make up only 3 percent of the annual sales revenue of an average household (155 ETB).

Crop utilization. One of the salient features of crop production in countries such as Ethiopia is that households consume a significant fraction of the output they harvest. This is also found in this dataset. We, however, note significant differences between crops. Only for two crops more than half of the production is sold, i.e. chat (81 percent) and oilseeds (68 percent). Even for a major cash crop as coffee, the majority of the production is consumed by the household itself (64 percent) and only 35 percent of the coffee production is put up for sale. We note also large differences between the major cereals. Of all the cereals, teff is used most as a cash crop. A quarter of total production is being sold. This compares to 58 percent of its production being used for own consumption. Sorghum, maize, and barley show the lowest level of commercialization with a share of production that is being sold ranging from 10 percent to 13 percent. Farmers in the study area further rely little on markets to obtain seeds, as illustrated by relatively large percentages being retained for seed purposes, in the case of cereals varying between 6 percent (maize) and 19 percent (barley) of total household production.

Crop sales. The average revenue from crop sales in the survey area in the year prior to the survey amounts to 3,469 ETB per household. There are large differences between households and it is estimated that 50 percent of the households earned less than 597 ETB from crops sales. Coffee is the most important crop in total crop revenue, accounting for 40 percent of total crop sales revenue, followed by wheat accounting for 11 percent of the total crop sales revenue. This high contribution of coffee to total crop sales revenue could be driven by the high price of coffee relative to other crops. However, only 10 percent of the households are marketing coffee and are mainly concentrated in SNNP and Oromiya regions. Most of the crops are being sold to village traders and

few farmers travel far distances to sell produce as it is found that transportation costs make up a relatively small percentage of total sales earnings. Most importantly, most farmers chose buyers because they are able to pay immediately and not because they offer higher prices. This might reflect lack of trust in buyers as well as a relative large importance of distress sales. It is also found that few farmers use mobile phones for their sales transactions, partly reflecting the still relatively low penetration of mobile phones in rural areas of Ethiopia. If farmers use a mobile phone in transactions they often agree on prices on the phone.

Livestock sales. The revenue from livestock sales for an average household in the survey made up to 1,344 ETB in the year prior to the survey. Revenue from livestock sales constitutes 38 percent of the revenue from crop sales. Within the sales of livestock, it is especially the sales of cattle that are important as they account for 77 percent of the total sales revenue. The sale of goats and sheep comes second accounting for 13 percent of total livestock sales revenue. Pack animals and chicken each count for 5 percent of total livestock sales revenue. As for the case of crops, expenses for transportation are a small proportion of the livestock sales revenue. The most important reason for choosing a buyer is linked to immediate cash payments, followed by the prices offered. No choice in traders is relatively less important as the reason for the choice of a particular trader, but it still makes up 10 percent of the stated answers for choosing a trader. It thus seems that farmers in these surveyed areas might benefit from improved choices in sales options.

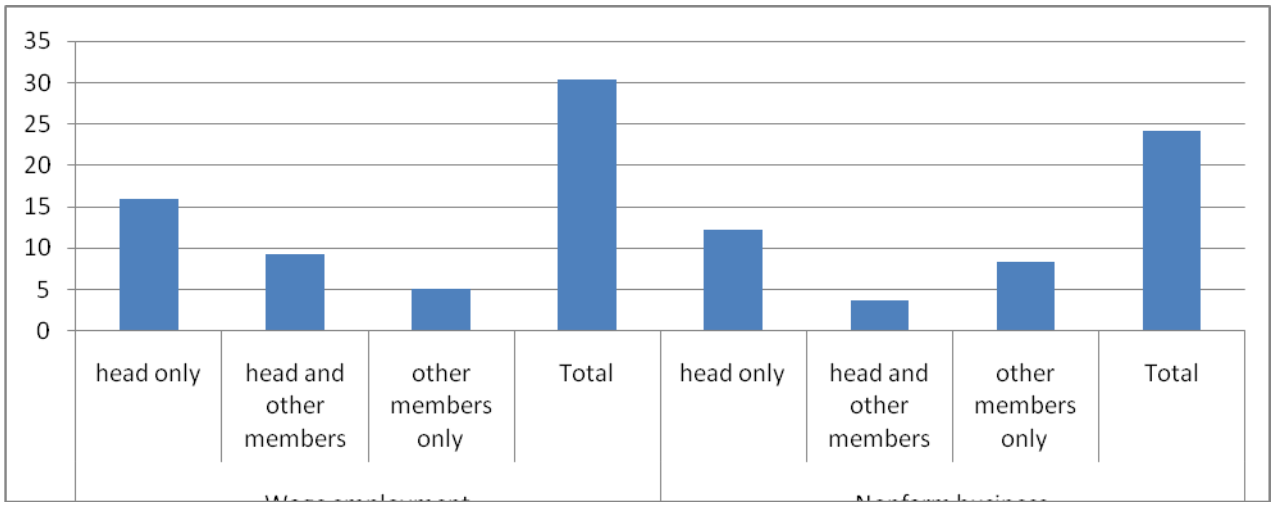
Livestock products. The revenues that were generated from the sales of livestock products amounted to 155 ETB for an average household in the year prior to the survey. The most important livestock product was the butter/yoghurt category accounting for 55 percent of all sales income in this category. Second came eggs, accounting for 30 percent. Meat (6 percent), hides and skins (4 percent), fresh milk or cream (4 percent), and dung (1 percent) are relatively much less important. While sales to village traders are still relatively most important, direct sales to consumers for these products are much more important than for crop and livestock sales, reflecting the more perishable nature of the majority of these products. They are thus probably relatively more important for the local economy. The most important reason for the choice of a buyer is again immediate cash payments (and less the level of the price offered).

Chapter 7: Wage Employment and Nonfarm Businesses

7.1. Participation in Wage Employment and Nonfarm Business

Although farming on own agricultural land is the major activity of households in rural Ethiopia, some rural households are also engaged in wage employment or nonfarm businesses. In the AGP baseline survey, households were asked if any of their members participated in any wage employment or nonfarm businesses and the type of activity they were engaged in. Figure 7.1 presents the percentage of households who participate in wage employment or nonfarm businesses. In 30 percent of the households either the head or other members in the households were engaged in some sort of wage employment. In half of the cases, it is the head only that participated in such activities while in close to 10 percent of the households it is the head and at least one other member that are engaged in wage employment. In the remaining 5 percent of the households, only other members of the households have some participation. In only 24 percent of the households head or other members were engaged in nonfarm business. This could be due to the capital requirement of starting one's own business as opposed to wage employment which does not have any capital requirement. In 12 percent of the cases, the nonfarm businesses are owned and operated by the household heads. In the remaining 8 and 4 percent the businesses are owned by other members only, and by the head and other members together, respectively.

Figure 7.1. Percentage of households with wage employment and nonfarm businesses



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

When looking into the characteristics of households that engage in wage employment or nonfarm businesses, the percentage of households engaged in such activities is higher for male headed

households compared to the female headed ones. The percentage difference is particularly higher for wage employment (8.2 percent more) compared to the difference in terms of being engaged in nonfarm businesses (6.5 percent more). There is a 6.3 percent difference between households with mature heads and households with younger heads in wage employment. However, the difference is about 9 percent for those engaged in nonfarm businesses. This could be a reflection of the risk taking behaviour of younger household heads compared to the mature heads.

The percentage of households in AGP woredas engaged in wage employment is slightly higher than those in non-AGP woredas while for nonfarm businesses the reverse is true. However, the pattern in terms of the difference between female and male headed households, and young and mature heads is similar in both woreda categories, i.e. male headed and young headed households in both AGP and non-AGP woredas are engaged more in wage employment and nonfarm business compared to their respective counterparts.

Table 7.1. Percentage of households with wage employment or nonfarm businesses, by household categories and AGP status

Group	Category	Wage employment	Nonfarm business
National	All HHs	30.4	24.2
	Female HHHs	24.6	19.6
	Male HHHs	32.8	26.1
	Mature HHHs	28.0	20.8
	Youth HHHs	34.3	29.9
AGP- woredas	All HHs	30.8	19.7
	Female HHHs	22.2	19.6
	Male HHHs	31.9	19.8
	Mature HHHs	25.9	16.9
	Youth HHHs	34.3	24.6
Non-AGP woredas	All HHs	29.0	25.6
	Female HHHs	25.4	19.7
	Male HHHs	33.1	28.1
	Mature HHHs	28.7	22.0
	Youth HHHs	34.3	31.4

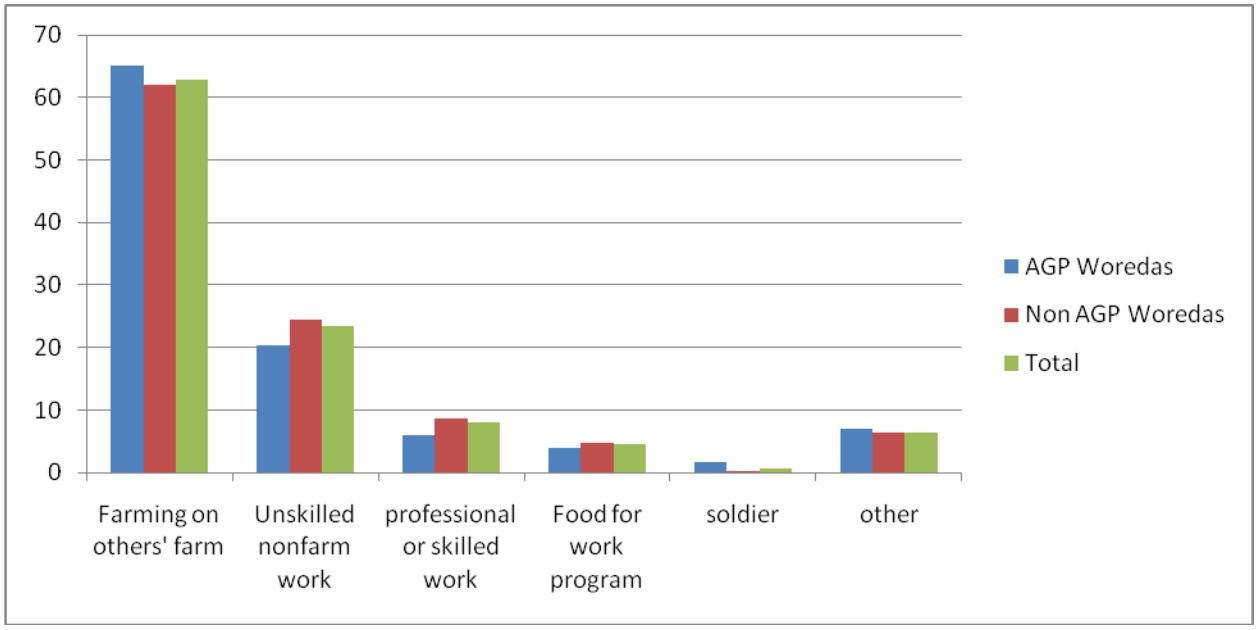
Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stand respectively for 'Headed households' and 'Households'.

7.2. Types of Wage Employment and Nonfarm Business Activities

Wage Employment Activities

Figure 7.2 presents the type of activities households are engaged in by AGP woreda classification. The most common wage employment type is working on agricultural farms for cash or in-kind payments. From those households who indicated that they were engaged in some sort of wage employment activities, 63 percent were working in agriculture. The next common employment activity, practiced by about 23 percent of the households, was unskilled nonfarm work which may include casual works not related with agricultural production. Professional or skilled work accounted for 8 percent of the households. A slightly higher percentage of households in non-AGP woredas were engaged in both unskilled nonfarm work and professional work.

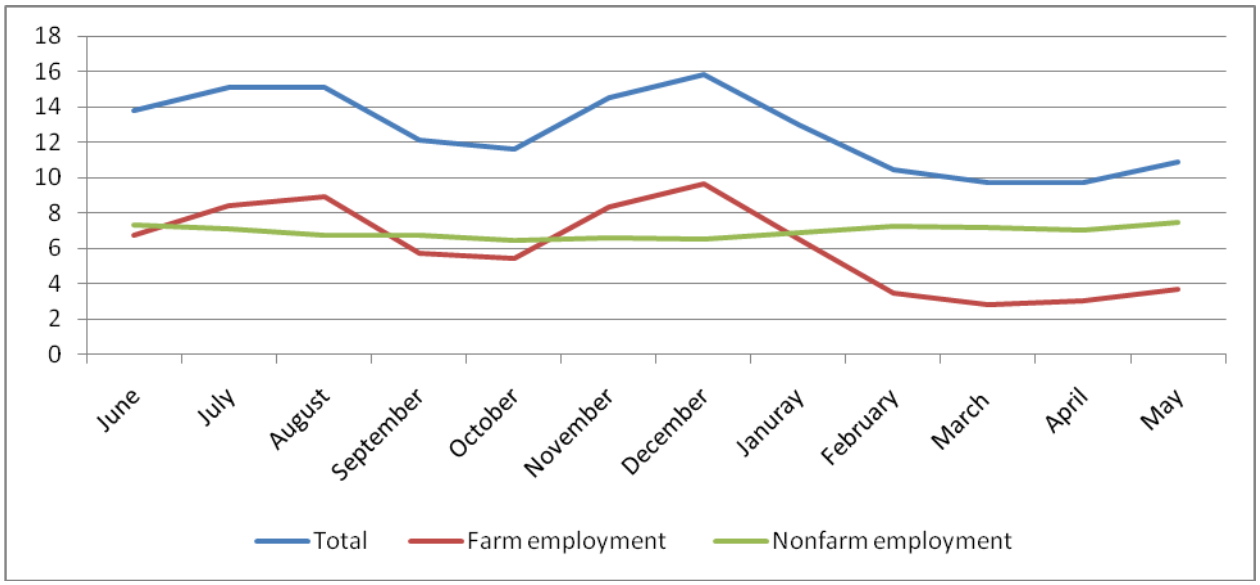
Figure 7.2. Percentage of households, by type of wage employment and AGP status [for households that earn wages]



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Wage employment is a seasonal activity for agricultural households. As presented in Figure 7.3, this is especially true for farm employment. As can be expected, the percentage of households who are engaged in farm employment is the highest in the planting and harvesting seasons. The highest percentage of household participation in farm employment is 10 percent in the month of December which is the major *Meher* harvesting season followed by 8 percent in August, the main planting season. The percentage falls during the slack season, which is between September and October, and even declines further after February. However, no seasonality is observed for nonfarm employment. The percentage of households engaged in nonfarm employment is between 6 and 8 percent throughout the months. The total employment follows the farm employment pattern since more than 60 percent of the households with wage employment were mainly engaged in agricultural employment.

Figure 7.3. Percentage of households with wage employment, by type of wage employment and month



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table 7.2 below presents the percentage of households in each wage employment activity by household characteristics (percentages calculated from those households who indicated that at least one member is engaged in wage employment). The percentage of households who have at least one member employed in farming is slightly higher for female headed households (66 percent) compared to male headed households (62 percent). In contrast, 9 percent more male headed households participate in professional or skilled work compared to female headed households.

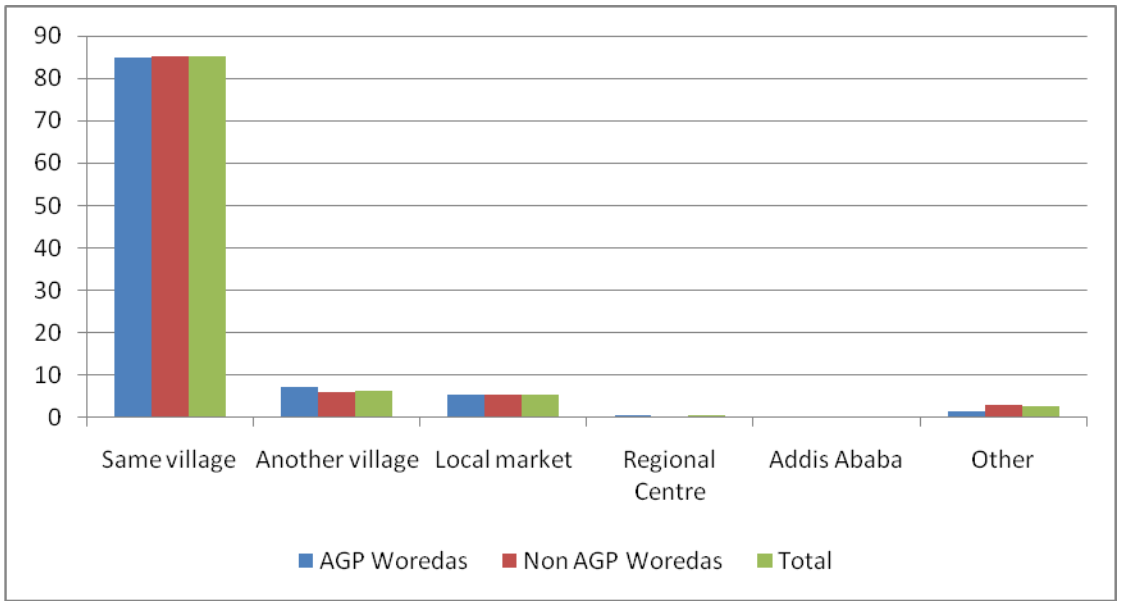
Table7.2. Percentage of households, by type of wage employment, by household categories, and AGP status [for households that earn wages]

Group	Category	Farming on others' farm	Unskilled nonfarm work	Professional or skilled work	Food for work program	Soldier	Other
National	All HHs	62.8	23.5	8.0	4.6	0.6	6.4
	Female HHHs	65.8	26.0	1.5	4.6	0.4	6.2
	Male HHHs	61.8	22.6	10.4	4.6	0.7	8.8
	Mature HHHs	65.2	22.4	7.8	4.2	0.3	8.3
	Youth HHHs	59.5	25.0	8.3	5.2	1.1	7.9
AGP woredas	All HHs	65.1	20.4	5.9	3.9	1.6	6.9
	Female HHHs	61.1	22.1	5.0	5.5	0.3	7.9
	Male HHHs	66.4	19.9	6.2	3.4	2.0	6.5
	Mature HHHs	65.9	20.0	5.3	4.4	0.5	7.1
	Youth HHHs	64.1	20.9	6.7	3.3	3.0	6.5
Non-AGP woredas	All HHs	62.1	24.4	8.6	4.8	0.3	6.3
	Female HHHs	67.0	27.0	0.5	4.3	0.4	3.7
	Male HHHs	60.3	23.4	11.6	5.0	0.3	7.3
	Mature HHHs	64.9	23.1	8.5	4.2	0.2	6.3
	Youth HHHs	58.1	26.2	8.8	5.7	0.5	6.3

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' and 'HHs' stand respectively for 'Headed households' and 'Households'. The percentage of households could sum up more than 100 percent since households can be engaged in more than one wage employment activities.

Figure 7.4 presents the place where household members were employed. The results suggest that there is no considerable labour migration. Close to 85 percent of those with wage employment worked in their own respective villages. Those that were working in other villages or the local market town were only 6 percent and 5 percent, respectively. Less than 1 percent of the wage employment was in the regional centre or Addis Ababa. The pattern is similar for households both in the AGP and non-AGP woredas.

Figure 7.4. Percentage of households by place of wage employment, by AGP status [for households that earn wages]

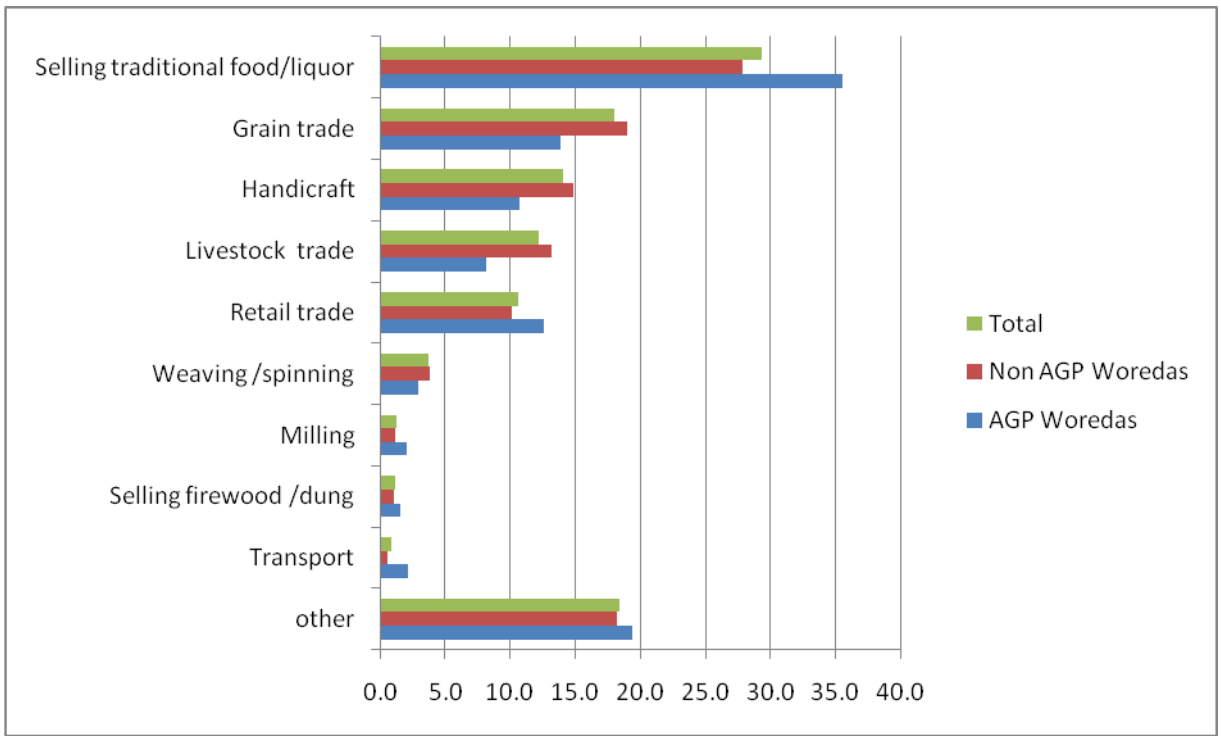


Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Nonfarm Business Activities

As presented in Figure 7.5 below, the most common type of nonfarm business activity households participate in is selling traditional food/liquor. Out of those households who indicated engagement in any nonfarm business, 29 percent were in a business of selling traditional food or drinks. The next common business activity is grain trade with 18 percent participation, followed by handicraft (14 percent) and livestock trade (12 percent). Weaving/spinning, milling, selling firewood/dung, and transport are activities carried out by a total of 7 percent of the households. In terms of difference between AGP and non-AGP woredas, the percentage of households engaged in the business of selling traditional food/liquor is higher by about 8 percent in AGP woredas while the second considerable difference is observed in livestock trade where the percentage of households in non-AGP woredas engaged in livestock trade is higher by close to 6 percent. Three percent more households are involved in handicraft as a business activity in non-AGP woredas compared to AGP, woredas; the difference for the remaining activities is much lower.

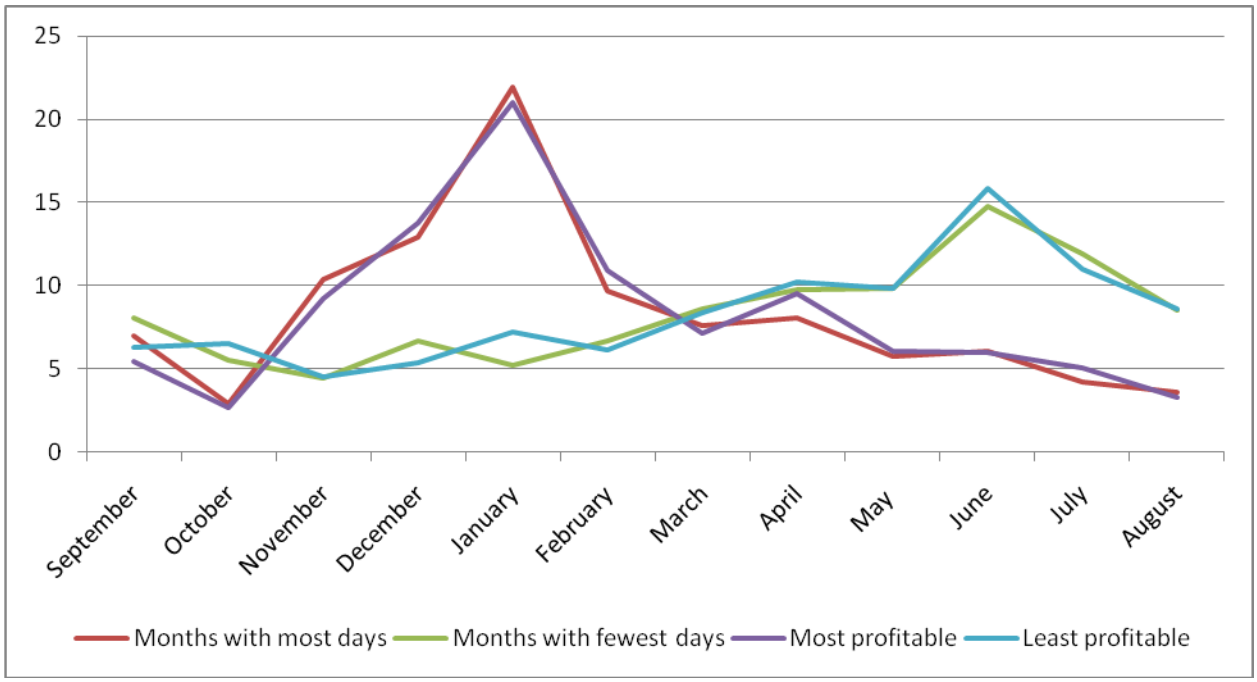
Figure 7.5. Percentage of households by nonfarm business activities and AGP status [for households that have nonfarm business activities]



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

The number of days households engage in nonfarm business differs by month (see Figure 7.6). Out of those households with some sort of nonfarm business, most households indicated that they worked on their nonfarm business the most between November and February with a peak in January. About 23 percent indicated January to be the month when they had worked on their nonfarm business the most days. The months in the main harvesting period were also the months that households with nonfarm businesses were the most profitable. This could be because the harvesting season is the period where most farm households are expected to have their highest earnings from their farm production. During this period, the market for nonfarm businesses is likely to be higher, since most farmers would be able to spend from their farm incomes. In contrast, households with nonfarm businesses worked for the fewest days on their nonfarm business in June, which is a planting season and when most of the resources of farm households are depleting. Similarly, in terms of profitability, the period between May and August was also the time that households reported that they were the least profitable from their businesses.

Figure 7.6. Months in which households had business activity for the most and fewest number of days (percentage of households with nonfarm business activities)



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Table 7.3 presents the percentage of households who participate in different nonfarm businesses by household characteristics. Most female headed households are engaged in selling traditional food/liquor. The next common nonfarm activity for female headed households is grain trade followed by handicraft. Although the most common activity for male headed households is also selling traditional food/liquor, the percentage of households engaged in the activity is much lower than for households with female heads. Grain trade and livestock trade are the second and third most common activities for male headed households. Comparison between households with mature and younger heads reveals that both types of households are mostly engaged in selling traditional food/liquor. However, more households with young heads are engaged in livestock trade than those with mature heads.

Table7.3. Percentage of households, by nonfarm business activities, household categories, and AGP status [for households that have nonfarm business activities]

Group	Category	Weaving /spinning	Mil-ling	Han-dicraft	Grain trade	Live-stock trade	Retail trade	Tran-sport	Selling firewood /dung	Selling traditional food/liquor	Other
National	All HHs	3.7	1.3	14.1	18	12.2	10.6	0.9	1.2	29.3	18.4
	Female HHHs	2.8	0.2	15.1	17.2	3.1	14.3	0.5	1.9	40.0	14.8
	Male HHHs	4.0	1.7	13.7	18.3	15.6	9.2	1.0	0.9	25.3	19.7
	Mature HHHs	4.7	1.6	15.5	19.2	8.0	10.1	0.9	1.4	32.2	16
	Youth HHHs	2.5	1.0	12.4	16.6	17.2	11.1	1.0	0.9	25.8	21.3
AGP woredas	All HHs	3.0	2.0	10.7	13.9	8.1	12.6	2.1	1.6	35.5	19.4
	Female HHHs	5.5	0.8	8.7	13.5	2.0	11.5	0.4	2.6	48.2	19.7
	Male HHHs	1.7	2.6	11.6	14.0	11.1	13.1	3.0	1.1	29.2	19.2
	Mature HHHs	4.8	1.3	16.8	20.2	8.6	9.0	0.8	1.2	31.7	14.7
	Youth HHHs	2.6	0.9	12.5	17.5	18.5	11.4	0.4	0.8	23.3	22.2
Non-AGP woredas	All HHs	3.8	1.1	14.8	19.0	13.2	10.1	0.6	1.1	27.8	18.2
	Female HHHs	2.0	0.0	16.9	18.3	3.4	15.1	0.6	1.7	37.6	13.4
	Male HHHs	4.4	1.5	14.1	19.2	16.5	8.4	0.6	0.8	24.5	19.8
	Mature HHHs	4.8	1.3	16.8	20.2	8.6	9.0	0.8	1.2	31.7	14.7
	Youth HHHs	2.6	0.9	12.5	17.5	18.5	11.4	0.4	0.8	23.3	22.2

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stand respectively for 'Headed households' and 'Households'. The percentage of households could sum up more than 100 percent since households can be engaged in more than one nonfarm business activities.

Table 7.4 shows where households with business activities sell their output or service. Forty three percent of the households sold their product or services within the village. The second most common place for selling their output is in their respective local markets. Only 1.7 percent of the households had the regional centre as their markets while those who provided to the Addis Ababa market were only 0.1 percent. Looking into the different characteristics of households, more than half of the female headed households had their own village as a market for their products while the major markets for male headed households were the local markets. A slightly higher percentage of male headed households sold their products in another village and regional centres. In comparing young and mature heads of households, 45 percent of the mature headed households sold their products in the same village - their main market - while 42 percent of the young headed households did so. The main markets for young headed households were the local markets. The major markets for non-AGP woredas were local markets while more than half of the households in the AGP woredas sold their outputs in the same village.

Table7.4. Market for selling products/services of nonfarm businesses, by household categories and AGP status [for households that have nonfarm business activities]

Group	Category	Same village	Another village	Local market	Regional centre	Addis Ababa	Other
National	All HHs	43.5	7.3	41.6	1.7	0.1	5.8
	Female HHHs	51.8	6.8	36.5	0.9	0.1	4.0
	Male HHHs	40.3	7.4	43.5	2.1	0.2	6.5
	Mature HHHs	44.9	6.9	40.1	2.6	0.2	5.3
	Youth HHHs	41.7	7.7	43.5	0.7	0.0	6.4
AGP woredas	All HHs	52.4	6.0	36.4	1.4	0.2	3.6
	Female HHHs	59.8	5.8	32.0	0.7	0.2	1.6
	Male HHHs	48.5	6.0	38.7	1.8	0.2	4.7
	Mature HHHs	51.1	5.3	38.3	1.4	0.4	3.5
	Youth HHHs	54.2	6.8	33.9	1.4	0.0	3.7
Non-AGP woredas	All HHs	41.5	7.6	42.8	1.8	0.1	6.3
	Female HHHs	49.4	7.1	37.9	1.0	0.0	4.7
	Male HHHs	38.7	7.7	44.5	2.1	0.1	6.9
	Mature HHHs	43.5	7.3	40.5	2.8	0.2	5.8
	Youth HHHs	39.0	7.9	45.5	0.6	0.0	7.0

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stand respectively for 'Headed households' and 'Households'.

Technical Support and Credit for Nonfarm Businesses

Thirteen percent of the households who have reported to have a nonfarm business have received some sort of technical assistance (Table7.5). The difference between male and female headed households who have received assistance is only about 1 percent. Two percent more mature headed households have received technical support compared to younger headed households. Fourteen percent of households in non-AGP woredas have received technical support compared to 10 percent in AGP woredas.

Table7.5. Percentage of households who received technical assistance or credit for their nonfarm business activities, by household categories and AGP status [for households that have nonfarm business activities]

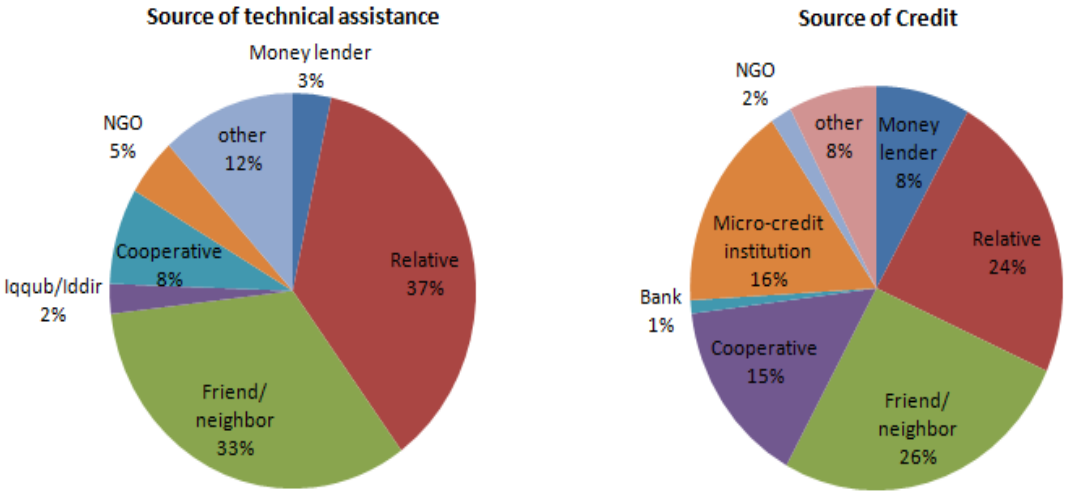
Group	Category	Any technical support	Borrowed money
National	All households	13.4	18.6
	Female household heads	12.8	16.6
	Male household heads	13.6	19.4
	Mature household heads	14.4	17.1
	Youth household heads	12.3	20.5
AGP woredas	All households	10.2	17.0
	Female household heads	6.4	15.7
	Male household heads	12.1	17.7
	Mature household heads	10.2	16.3
	Youth household heads	10.2	18.0
Non-AGP woredas	All households	14.3	19.1
	Female household heads	15.3	16.9
	Male household heads	14.0	19.8
	Mature household heads	15.6	17.4
	Youth household heads	12.8	21.1

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Out of all households who participate in nonfarm business activities, 18.6 percent have borrowed money to finance their businesses. More male headed households have borrowed money compared to female headed households. The percentage of households who have taken credit is 3 percent higher for households with younger heads compared to those with mature heads. In comparing households in AGP and non-AGP woredas, 19 percent of households in non-AGP woredas had borrowed some money compared to 17 percent in AGP woredas.

For those who have indicated that they have received some sort of technical or financial assistance, a question was asked from where they obtained such assistance. Figure 7.7 summarizes the source of technical support and credit for the business. Most of the technical assistance for nonfarm businesses was received from relatives and friends (70 percent of all assistance). Cooperatives gave technical support to 8 percent of the households while the role of NGOs is only 5 percent. In terms of credit, from the 18 percent of the households who have indicated to have received credit, the major credit providers were again relatives and friends accounting for 50 percent of the credit. The second most common source of credit, for those who received credit for their businesses, is micro-credit institutions followed by cooperatives with 16 and 15 percent contribution, respectively.

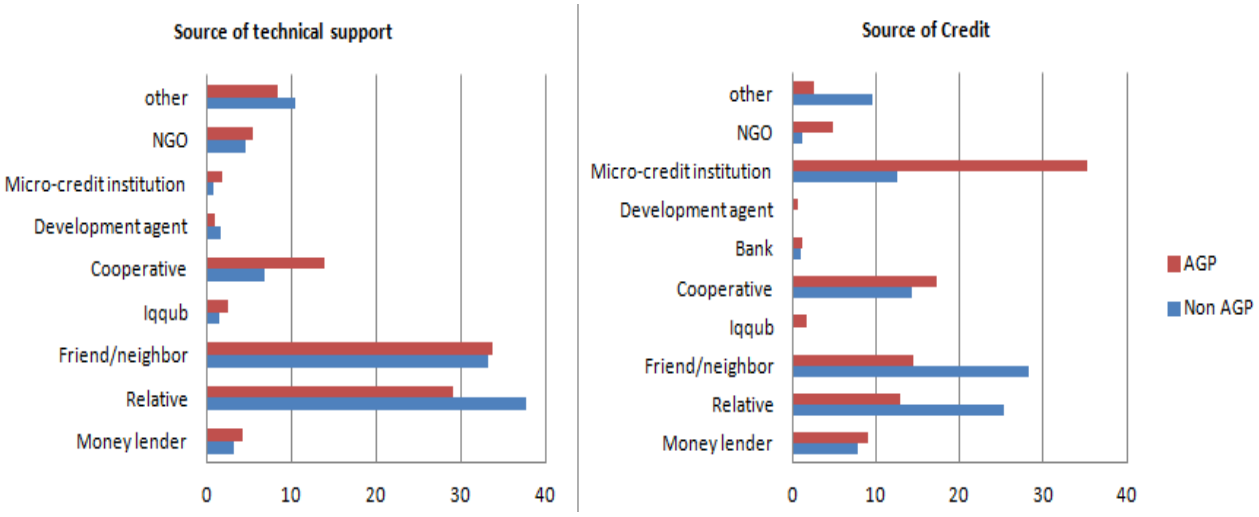
Figure 7.7. Source of technical assistance and credit



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Figure 7.8 compares between AGP and non-AGP woredas the sources of technical support or credit indicated by the households. Relatives and friends are the most common sources of technical support for households in both AGP and non-AGP woredas. The percentage of households who have received technical support from cooperatives is 5 percent higher in AGP woredas compared to non-AGP woredas. Not much difference is observed when considering the remaining sources of technical support. In terms of the source of credit, the primary source of credit for households in AGP woredas is micro-credit institutions (35 percent of the credit), while for households in non-AGP woredas micro-credit institutions came only at the fourth place (providing only 12 percent of the credit). For households in non-AGP woredas friends and relatives are the primary source of credit. The percentage of households that have received credit from NGO's is also 3.7 percent higher in AGP woredas than in non-AGP woredas.

Figure 7.8. Source of technical assistance and credit (percentage of households with nonfarm business activities receiving assistance/credit), by AGP status

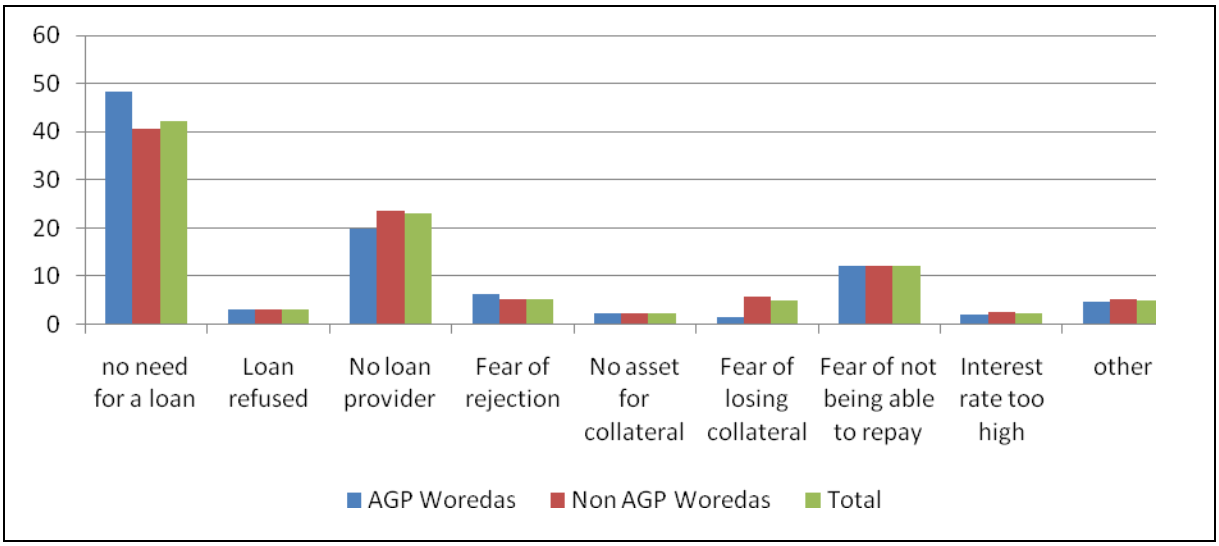


Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Reasons for Not Borrowing to Finance Nonfarm Businesses

Households who said they have nonfarm business but did not receive any credit were asked why they did not borrow any money to finance their business activities. Figure 7.9 summarizes the reasons. For 50 percent of the households who didn't receive credit their reason was simply because they did not need any loan. The second most common reason households mentioned was lack of loan providers in their area. Eighteen percent of the households indicated unavailability of a loan provider as their main reason for not borrowing money. The proportion is the same for households both in the AGP and non-AGP woredas. About 10 percent of the households did not borrow any money because they were afraid they would not be able to pay it back. Those who mentioned fear of being rejected by the loan providers, refusal from loan provider, high interest rate, fear of losing collateral, and lack of collateral as their major reason for not borrowing money were 5.1, 3.4, 3.2, 2.4, and 2.2 percent of all households, respectively. No considerable difference is observed between households in non-AGP and AGP woredas in terms of the reasons for not borrowing.

Figure 7.9. Reasons for not borrowing by AGP status (percentage of households that did not borrow)



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

As presented in Table 7.6., the reason provided by households for not borrowing to finance their nonfarm businesses differs by the household characteristics. A slightly higher percentage (2.4 percent difference) of male headed households indicated that they did not have any need for a loan compared to female headed households. The proportion of female headed households who did not take any loan due to fear of not being able to repay is 7 percent higher than for male headed households. On the other hand, more male headed households reported unavailability of loan provider as their major reason for not borrowing. In terms of comparing young and mature headed households, fewer younger headed households reported fear of not being able to repay as their major reason. There are more pronounced differences in the gender and age categories between AGP and non-AGP woredas.

Table 7.6. Reason for not borrowing to finance nonfarm business (percentage of households that not borrowed), by household categories and AGP status

Group	Category	No need for a loan	Loan refused	No loan provider	Fear of rejection	No asset for collateral	Fear of losing collateral	Fear of not being able to repay	Interest rate too high	Other
National	All HHs	42.2	3.1	22.9	5.3	2.3	4.9	12.0	2.3	5.0
	Female HHHs	41.9	3.5	16.5	5.5	3.3	4.3	17.1	2.9	5.0
	Male HHHs	42.3	3.0	25.3	5.2	1.9	5.2	10.1	2.1	5.0
	Mature HHHs	41.4	3.4	24.0	4.6	2.4	4.4	12.9	2.3	4.6
	Youth HHHs	43.1	2.8	21.6	6.1	2.1	5.6	10.9	2.4	5.5
AGP woredas	All HHs	48.4	3.1	19.7	6.3	2.3	1.5	12.0	2.1	4.7
	Female HHHs	44.0	2.6	18.4	8.5	3.3	2.1	13.9	1.3	5.8
	Male HHHs	50.6	3.3	20.4	5.1	1.8	1.2	11.0	2.4	4.2
	Mature HHHs	47.5	2.7	19.1	7.0	1.8	1.4	13.4	2.2	5.0
	Youth HHHs	49.4	3.6	20.5	5.4	3.0	1.7	10.2	1.9	4.4
Non-AGP woredas	All HHs	40.7	3.1	23.6	5.1	2.3	5.7	12.0	2.4	5.1
	Female HHHs	41.3	3.8	16.0	4.6	3.3	4.9	18.1	3.4	4.7
	Male HHHs	40.5	2.9	26.4	5.2	1.9	6.0	9.9	2.1	5.2
	Mature HHHs	40.0	3.5	25.1	4.1	2.6	5.1	12.8	2.3	4.5
	Youth HHHs	41.6	2.6	21.8	6.3	1.9	6.5	11.1	2.5	5.8

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stand respectively for 'Headed households' and 'Households'.

7.3. Summary

This chapter describes wage employment and nonfarm business activities of the households in the four regions. Of all the household members, the head of the household takes the largest percentage in the participation in nonfarm business. In terms of age categories, the involvement of young household heads in nonfarm business and wage employment is higher than the matured ones. Similar, male headed households are more engaged than female headed households. However, female headed households involved much more in selling traditional food/liquor. It was noted in the survey results that households with young heads are more engaged in livestock trade than those with matured heads. Male headed households appear to have better access to markets outside their own villages while female headed households use more often their own village as a market place for their products. The major market for selling products/service for AGP and non-AGP woreda was found to be the same village as they are living in.

The survey results revealed that relatives and friend account for the largest share of credit source for the households' nonfarm businesses. However, microcredit institutions were found to be one of the main sources of credit for households living in AGP woredas. Households in the study area were asked to prioritize their reason for not receiving credit and a large percentage of the households indicated that they were not interested to take the loan followed by lack of institutions to provide loans in their area.

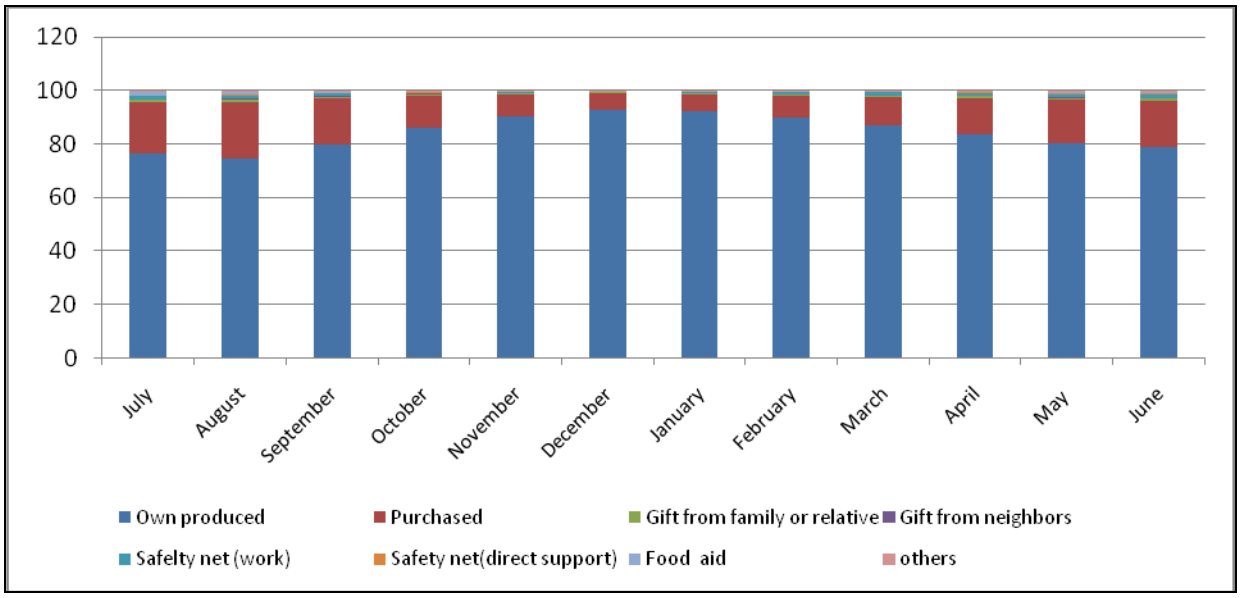
Chapter 8: Food Security, Nutrition, and Health Outcomes

As we discussed in Chapter 6 a large proportion of the crop output households produce is consumed at home. Consequently, households' level of food security is heavily influenced by households' level of food crop production. The AGP is expected to positively affect households' level of food security by increasing agricultural productivity, an important component of its primary objectives. This chapter describes different dimensions of household level food security. In the first section we describe the primary sources of household food consumption and periods in which households were food insecure. The AGP baseline survey collected data on dietary diversity — another dimension of food security — which will be described in the second section. In this regard, child growth and health is susceptible to availability and nutritional content of food; making the latter the most vulnerable item. As part of evaluating the effect of the AGP on the latter the survey collected data on child nutrition and health, discussed also in the second section of this chapter. In addition, the survey collected data on health status of household members as well as on sources of drinking water. We describe health related issues and sources of potable water in the third section. The final section summarizes.

8.1. Household Food Security

The AGP survey indicates that most rural households in Ethiopia are subsistence farmers that derive most of their food from their own production. Households' level of use of own-produced food varies during different months and agricultural seasons. In Figure 8.1 we summarize households' primary source of food for each month of the year. The data indicate that in any given month at least three-quarters of the households used own-produced food as their main food source. From June through September, the major raining and planting season, were the months during which the smallest proportion of households indicated using own-produced food as their major source. During these months purchased food was the major source for about 19 percent of the households while food gifts, assistance from the safety net, or other forms of food aid were the major sources for about 4 percent. The proportion of households that indicated own-produced food as their major source of food was the highest (ranging between 90-93 percent) during the months of November to February. The proportion purchased or obtained through some sort of assistance was the lowest during these months.

Figure 8.1. Primary source of food by month (percentage of households)



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

As shown in Table 8.1 below, the proportion of households reporting own produce as major food source is the highest in the month of December, with almost 93 percent of the households using own production as their primary food source. This was followed by the months of January (92 percent) and November and February (90 percent). On the other hand, a considerable proportion of the households purchased food from the market in the remaining months; from March to October more than 10 percent of the households reported food purchased from the market as their major food source. Similarly, a larger proportion of households are depending on gifts, safety net, and other food aid as their primary source of food during March–October, compared to the period November–February.

The general pattern observed is that the proportion of households which satisfy their food requirement from own production is the largest during and after harvest season while a considerable proportion rely on other sources in the other months. Some households are more dependent on food aid and other programs than others. For instance a higher proportion of female headed households indicated gift, safety net, or food aid as their major source of food in all months of the year compared to their male counterparts. Similarly, a slightly higher proportion of female headed households also indicated purchased food from the market as their major source of food consumption. However, also in these two cases the proportion is smaller during and after the harvest season.

Table 8.1. Primary source of food, by month and gender of household head (percentage of households)

	Own produce			Purchased			Gift/safety net/food aid		
	Female HHHs	Male HHHs	Total	Female HHHs	Male HHHs	Total	Female HHHs	Male HHHs	Total
July	68.8	79.6	76.3	24.7	17.1	19.4	6.5	3.3	4.3
August	67.0	78.1	74.7	26.3	18.8	21.1	6.7	3.1	4.2
September	72.6	82.6	79.6	22.3	15.3	17.4	5.1	2.1	3.0
October	81.2	88.4	86.2	14.6	10.5	11.8	4.2	1.1	2.0
November	85.5	92.2	90.2	11.3	7.2	8.4	3.3	0.6	1.4
December	88.6	94.5	92.7	9.2	5.1	6.3	2.2	0.5	1.0
January	88.4	93.8	92.2	8.7	5.3	6.3	2.9	0.9	1.5
February	84.4	92.4	90.0	12.3	6.4	8.2	3.3	1.3	1.9
March	80.5	89.6	86.8	14.9	8.8	10.6	4.8	2.0	2.5
April	76.7	86.6	83.7	18.5	11.4	13.5	4.8	2.0	2.8
May	73.5	83.3	80.3	20.8	14.0	16.0	5.8	2.7	3.6
June	73.0	81.7	79.1	21.2	15.3	17.1	5.8	3.0	3.9

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' stands for 'Headed households'

Comparison between households with mature and young heads reveals that a higher proportion of households with mature heads reported to have own produce as primary food source in all months compared to households with young heads. However, also the proportion of households that reported gift, safety net, or other form of food aid as their primary source of food is in most months higher for households with mature heads than for those with young heads. This means also that a smaller proportion of mature headed households reported to have purchased food as their major food source compared to their younger counterparts. (Table 8.2).

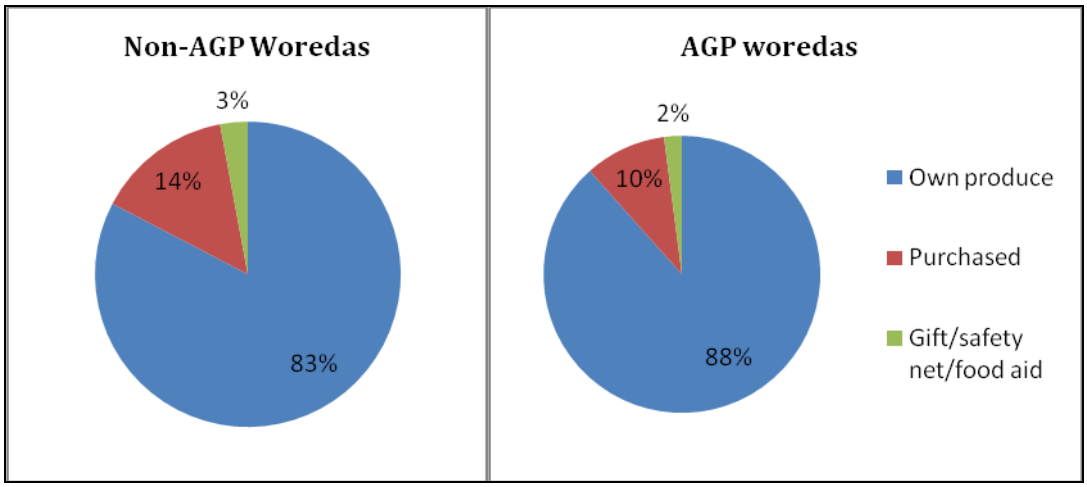
Table 8.2. Primary source of food, by month and age of household head (percentage of households)

	Own Produce		Purchased		Safety net/food aid	
	Mature HHHs	*Young HHHs*	*Mature HHHs*	*Young HHHs*	*Mature HHHs*	*Young HHHs*
July	76.6	75.9	18.6	20.6	4.8	3.5
August	75.5	73.5	20.1	22.8	4.5	3.7
September	80.6	77.9	16.3	19.3	3.1	2.8
October	87.2	84.7	10.8	13.3	2.1	2.0
November	90.6	89.4	7.9	9.2	1.5	1.4
December	92.8	92.5	6.3	6.5	0.9	1.0
January	92.5	91.6	6.2	6.6	1.3	1.8
February	90.3	89.5	8.0	8.4	1.7	2.2
March	87.6	85.6	9.9	11.8	2.5	2.6
April	84.0	83.1	13.0	14.3	3.0	2.6
May	80.5	80.1	15.5	16.8	4.0	3.0
June	79.2	78.9	16.7	17.8	4.2	3.4

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' stands for 'Household heads'

A similar comparison of households in AGP and non-AGP woredas reveals that a slightly smaller proportion of households in non-AGP woredas rely on own production (Figure 8.2). In an average month, 88 percent of the households in AGP woredas indicated own production as their primary source of food while the proportion was 83 percent for households in the non-AGP woredas. Throughout the year, an average of about 3 percent of the households in the non-AGP woredas primarily relied on food from gifts, safety nets, or other food aid while this proportion was slightly lower (2 percent) in AGP woredas.

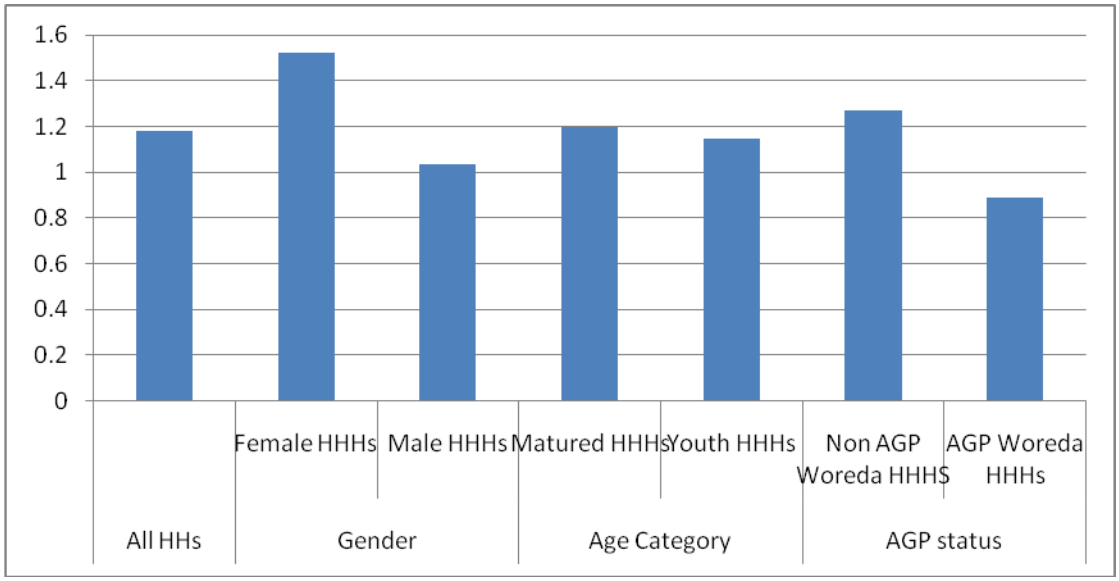
Figure 8.2. Primary source of food by AGP status (100%=all households)



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

The length of period in which households experienced food shortage or were food insecure is another measure of households' level of food security. As shown in Figure 8.3 below, households reported that they were food insecure for an average of 1.2 months in the one year period before the survey. There was a difference of half a month between the periods in which male and female headed households were food insecure. The number of months that female headed households were food insecure was 1.5 months while it was only a month for male headed households. There is a very slight difference between households with mature and young heads. When comparing households in AGP woredas with those in the non-AGP woredas, we find a difference in food security as large as the one observed between male and female headed households is observed. Households in the AGP woredas were food insecure for an average of 0.9 months while those in the non-AGP woredas were food insecure for 1.3 months.

Figure 8.3. Average number of months household was food insecure, by household categories and AGP status



Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stand respectively for 'Household heads' and 'Households'.

8.2. Household Diet, and Child Nutrition and Feeding Practices

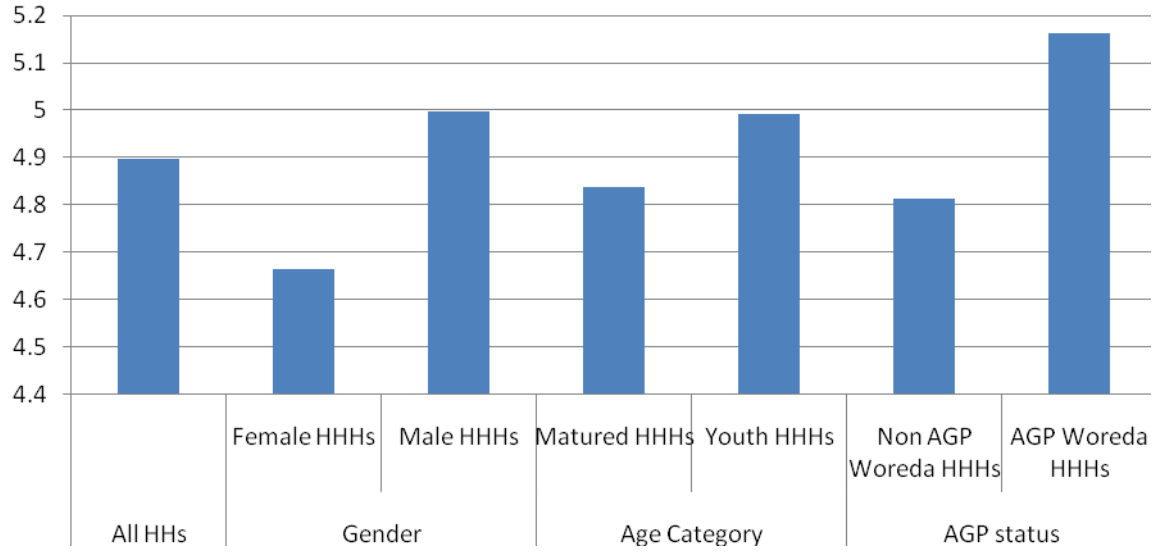
Household Diet

Household' dietary diversity, defined as the number of food groups consumed by a household over a given period, is another measure used to indicate the food security level of households (Hoddinott and Yohannes, 2002). A varied diet is associated with an improved anthropometric status of children and a lower mortality risk from different diseases (*ibid.*). In this survey households were asked if they have consumed a list of food items over the past 7 days of the survey. These food items were aggregated to form 10 major food groups[17] from which the number of different food groups consumed is calculated. The results indicate that households on average have a dietary diversity score of 4.6. This implies that, on average, households consume about 4.6 types of food groups. However, differences are observed among different households. Figure 8.4 presents the average diversity score by different characteristics of household heads. Male headed households have a higher average dietary diversity score relative to female headed households. Households with young heads have a slightly higher dietary diversity score compared to those with mature heads.

[17] The following food groups were used to create the Household Dietary Diversity Score: cereals, roots, vegetables, fruits, meat, eggs, pulses, milk and milk products, sugar, and coffee.

Comparing AGP and non-AGP woredas, households in AGP woredas have a higher diversity score compared to those in non-AGP woredas.

Figure 8.4. Household dietary diversity score, by household category and AGP status



Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' stands for 'Household heads'.

Infant and Child Feeding Practices

For children under the age of 6 months breast feeding is both sufficient and beneficial for nutrition; additional sources of feeding are discouraged since it may expose new-born infants to illness (CSA, 2011). At a later age, however, supplementary liquids and other solid foods are required for children's nourishment. The AGP baseline survey collected data on households' feeding practices of infants and children under the age of two. Information on breast feeding status is collected for each household for a 24 hour period before the date of data collection. Moreover, data were collected on whether the child consumed other food categories in the last 7 days. As presented in Table 8.3, 93 percent of the infants under the age of 2 months are exclusively breast fed. As the age of the infants increases, it can be clearly seen that the percentage of infants who take supplementary food also increases. Only 28 percent of infants under the age of 6 months are given complementary food in addition to breast feeding while it is 50 percent for those infants between six and nine months. The percentage of infants who are not breastfed increases with age reaching 24 percent for children between 20 and 24 months.

Table 8.3. Child feeding practices by age (100%=all children in particular age group)

Months	Not breastfeeding	Exclusively breastfed	Breast feeding and consuming plain water only	Breast feeding and liquid/juices	Breast feeding and other milk	Breast feeding and complementary food
<2	7.4	92.6	0.0	0.0	0.0	0.0
2-3	0.0	90.8	8.4	0.0	0.0	0.8
4-5	1.7	21.2	11.6	2.1	15.0	48.4
6-7	2.8	23.8	17.6	7.9	8.0	39.8
8-9	3.8	3.4	9.4	8.1	14.3	61.0
10-11	1.4	6.7	10.7	6.1	8.9	66.2
12-15	3.1	2.8	4.6	0.5	3.0	86.1
16-19	5.5	3.4	3.1	1.1	4.5	82.4
20-24	24.4	4.0	6.1	1.0	0.5	64.0
<6	1.6	50.9	9.5	1.2	8.6	28.2
6-9	3.3	14.1	13.7	8.0	11.0	49.9

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: The classification used for the feeding practices is produced similar to the presentation in the CSA EDHS (Ethiopian Demographic and Health surveys) (2011) preliminary report under the section "Infant and Child feeding practices" page 18.

As shown in Table 8.4, all infants under two months old were breast fed in the non-AGP woredas while the proportion was lower at around 86 percent, for those in the AGP woredas. The gap is even higher for children between the ages of two and three months with 100 percent of the infants in non-AGP woredas exclusively breastfed relative to 58 percent in AGP woredas. A higher proportion of children in AGP woredas (39 percent) appear to take plain water supplementing breast milk. In non-AGP woredas 63 percent of children between four and five months are given complementary food while the proportion is about 22 percent in AGP woredas.

Considering children under 6 months, the proportion of children who are exclusively breast fed is 1.2 percent higher in the non-AGP woredas than in the AGP woredas. However, the difference is more substantial when considering children who are given in addition plain water, liquids/juices, or other milk, with the proportion in non-AGP woredas being 7.8, 3.9, and 4.4 percent higher, respectively, than the corresponding proportion in AGP woredas.

Table 8.4. Child feeding practices by age and AGP woreda (100%=all children in particular age group)

Age in months	Not breastfeeding	Exclusively breastfed	Breast feeding and plain water only	Breast feeding and liquid/juices	Breast feeding and other milk	Breast feeding and complementary food
AGP woredas						
<2	14.3	85.7	0.0	0.0	0.0	0.0
2-3	0.0	57.6	38.9	0.0	0.0	3.5
4-5	4.7	40.0	9.4	6.1	18.2	21.5
6-7	1.2	27.3	16.0	4.0	17.2	34.2
8-9	4.0	5.4	11.7	7.2	5.9	65.8
10-11	7.2	6.7	7.9	5.2	8.0	65.0
12-15	3.0	4.8	5.6	2.3	3.6	80.7
16-19	2.6	2.5	5.2	0.6	1.5	87.7
20-24	13.0	4.4	8.5	0.0	2.0	72.1
<6	5.2	49.7	14.9	3.9	11.7	14.6
6-9	1.96	14.5	16.2	6. 8	16.5	44.0
Non-AGP woredas						
<2	0.0	100.0	0.0	0.0	0.0	0.0
2-3	0.0	100.0	0.0	0.0	0.0	0.0
4-5	0.0	11.0	12.8	0.0	13.2	63.0
6-7	3.3	22.7	18.2	9.2	4.9	41.7
8-9	3.7	2.8	8.7	8.4	16.9	59.5
10-11	0.0	6.7	11.4	6.3	9.2	66.5
12-15	3.1	2.2	4.3	0.0	2.9	87.5
16-19	6.5	3.7	2.4	1.3	5.6	80.6
20-24	28.1	3.9	5.3	1.4	0.0	61.3
<6	0.0	50.9	7.1	0.0	7.3	34.7
6-9	3.5	13.0	13.6	8.8	10.7	50.3

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Nutritional Status of Children

Anthropometric measures are used to understand the nutritional status of children. Data on anthropometric measures were collected in the AGP survey. The nutritional status of children in the households surveyed, based on their age, height, and weight, is compared with the status of a reference population that is considered to be well-nourished. The reference population constitutes the WHO Multicentre Growth Reference Study Group, 2006. Such comparisons provide a relative

measure of the nutritional status of children in the households surveyed. Accordingly, measures of age-for-height, age-for-weight, and weight-for-height are used. A more than minus two standard deviation (-2Sd) from the median of the reference population is an indication of moderate malnourishment while a minus three standard deviation (-3Sd) is a severe case of malnourishment.

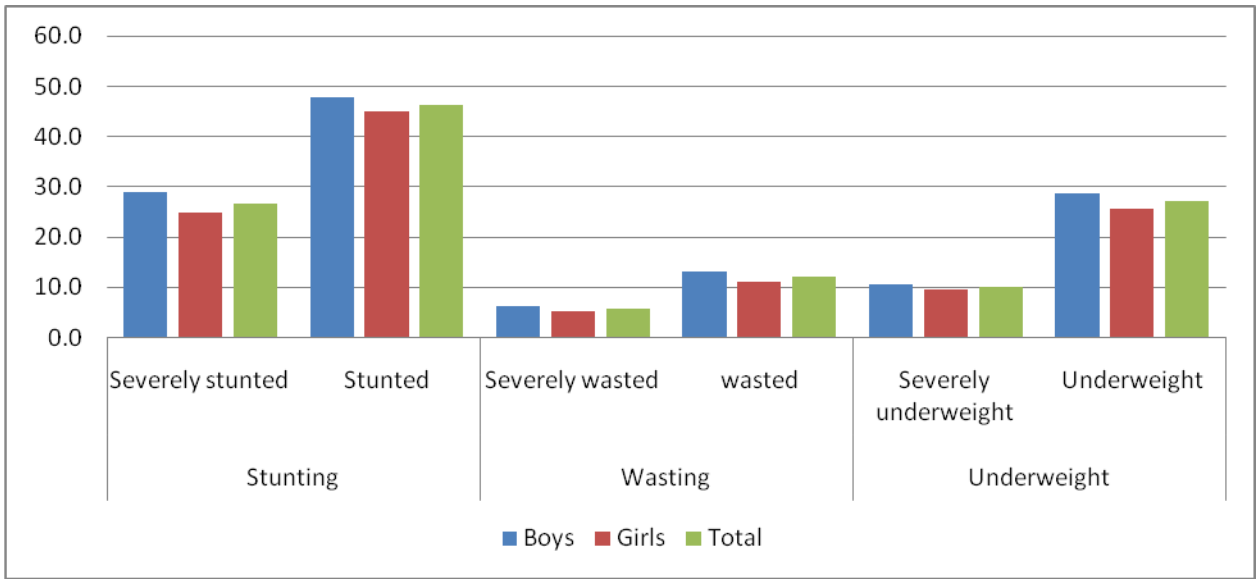
Children who have a height-for-age less than minus two standard deviations from the median of the reference population are considered to be short for their age, a condition described as moderate stunting. Moreover, those with less than minus three standard deviations are considered to be severely stunted. Stunting is a cumulative indication of a long term malnourishment. In this survey, 46.2 percent of children under the age of five were found to be stunted while 26.7 percent were severely stunted (Figure 8.5). A larger proportion of boys were stunted compared to girls; slightly less than half of the boys under the age of five were stunted while it was 45 percent for girls. Also, 4 percent more boys were severely stunted compared to girls.

An indicator for the current nutritional status of children is weight-for-height. Depending on the severity of the incidence, a child that is too thin for his/her height is referred to as wasted or severely wasted. The data in this survey indicates that 12 percent of the children were wasted while 5.7 percent were severely wasted. As in the case of stunting, more boys are both moderately and severely wasted as compared to girls. However the difference between boys and girls is lower in the case of wasting than that of stunting.

Weight for age is considered as an indicator for both acute and chronic malnutrition. It measures whether the weight of a child for his/her age is much different from a reference of a well-nourished population. About 27 percent of the children surveyed are underweight while 10 percent are severely underweight. Relative to girls, the proportion of boys moderately and severely underweight is higher by 3.1 and 1.1 percentage points, respectively.

Table 8.5 compares the level of child malnourishment among different household categories. The proportion of stunted, wasted, and underweight children is lower in female headed households, which also perform better in all three severely malnourished versions of the measures. The proportion of malnourished children is higher for households with young heads than for those with mature heads, with the exception of proportion of children that are wasted being larger in mature headed households.

Figure 8.5. Percentage of malnourished children under the age of five, by gender



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Generally, a higher proportion of children in AGP woredas are stunted relative to children in non-AGP woredas. The proportion of underweight and wasted children is also slightly higher for AGP woredas.

Table 8.5. Measures of malnutrition, by household categories and AGP status

Group	Category	Stunting		Wasting		Underweight	
		Severely stunted	Stunted	Severely wasted	Wasted	Severely underweight	Underweight
National	All HHs	26.7	46.2	5.7	12.0	10.1	27.1
	Female HHHs	24.7	43.5	5.7	11.1	8.1	24.0
	Male HHHs	27.2	46.7	5.8	12.2	10.5	27.7
	Mature HHHs	25.5	44.7	5.7	12.5	9.4	26.5
	Youth HHHs	28.0	47.6	5.8	11.5	10.7	27.7
AGP woredas	All HHs	27.5	46.7	5.8	12.2	10.4	27.4
	Female HHHs	24.9	44.3	6.9	12.3	8.7	23.6
	Male HHHs	28.0	47.3	5.6	12.1	10.8	28.3
	Mature HHHs	25.8	44.5	5.6	11.7	9.4	25.9
	Youth HHHs	29.2	49.1	6.1	12.6	11.5	29.0
Non-AGP woredas	All HHs	25.8	45.9	5.7	12.0	9.6	26.8
	Female HHHs	25.1	43.4	3.4	9.1	7.1	25.7
	Male HHHs	26.0	46.4	6.1	12.5	10.1	27.1
	Mature HHHs	25.6	46.2	6.0	13.1	9.8	28.2
	Youth HHHs	26.1	45.7	5.4	10.9	9.4	25.6

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Note: 'HHHs' and 'HHs' stand respectively for 'Headed households' and 'Households'

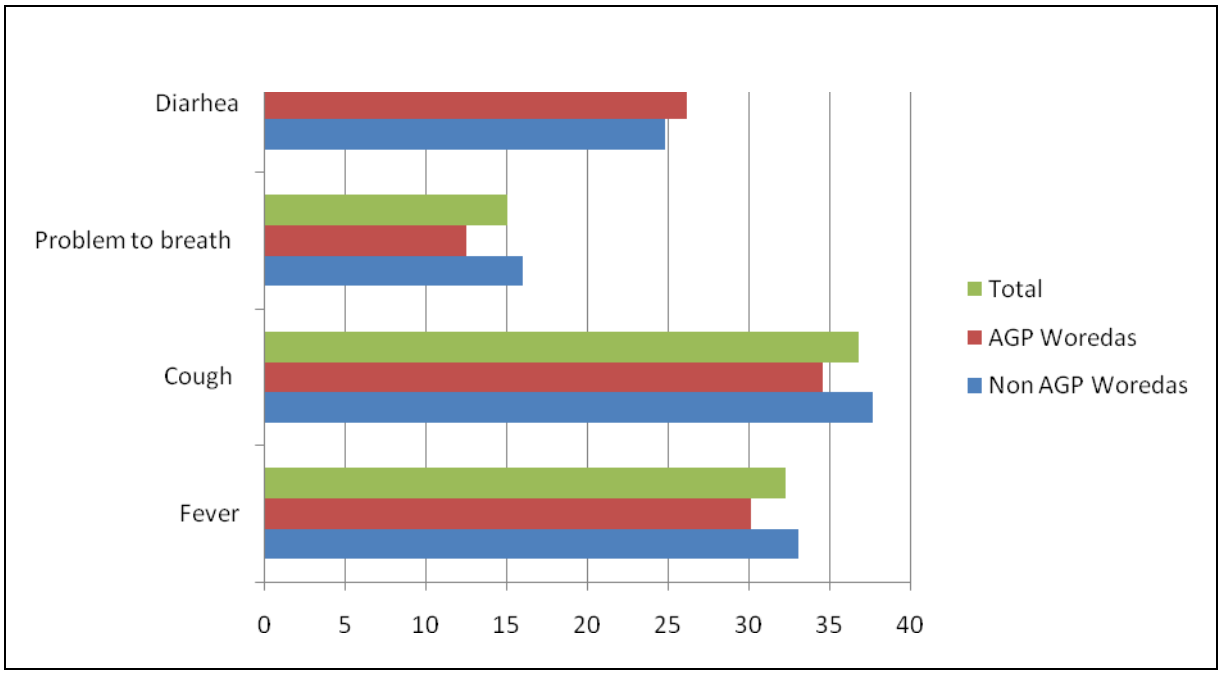
8.3. Child and Adult Health

This section describes the health status of household members and households' access to safe drinking water. In the first subsection we discuss about the health status of children under 5 years of age while the second section deals with members 15 years and older. Due to the contribution of safe drinking water to a healthy diet and the negative effects of waterborne diseases that could result from inaccessibility of safe drinking water we also describe households' access to the latter in this section.

Child Health

According to WHO (2011) acute respiratory infections and diarrhoea are among the leading causes of death in children under age of 5 years in developing countries. The AGP baseline survey asked households if children under the age of two years were sick of fever, coughing/cold, had breathing problems or diarrhoea in the two weeks before the survey. Figure 8.6 presents the prevalence of common child diseases by AGP status. Thirty seven percent of the children were reported to have been coughing while about 15 percent had some sort of a breathing problem. About 32 and 25 percent of the children had fever and diarrhoea, respectively. A higher proportion of children in non-AGP woredas had some sort of breathing problems (3.5 percent more), coughing (3.1 percent more), and fever (2.9 percent more) compared the children in AGP woredas, while diarrhoea was more prevalent in AGP woredas (1.0 percent more).

Figure 8.6. Percentage of children under the age of five with common diseases, by AGP status



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

The difference in the prevalence of common child diseases among different household groups is given in Table 8.6. The proportion of children affected by fever, respiratory infections, and diarrhoea is slightly higher in female headed households than in male headed households. A higher proportion of children in households with mature heads were affected by fever, breathing problem, and diarrhoea relative to households with young heads while the reverse is true for coughing.

Table 8.6. Percentage of children under the age of five with common diseases, by household categories and AGP status

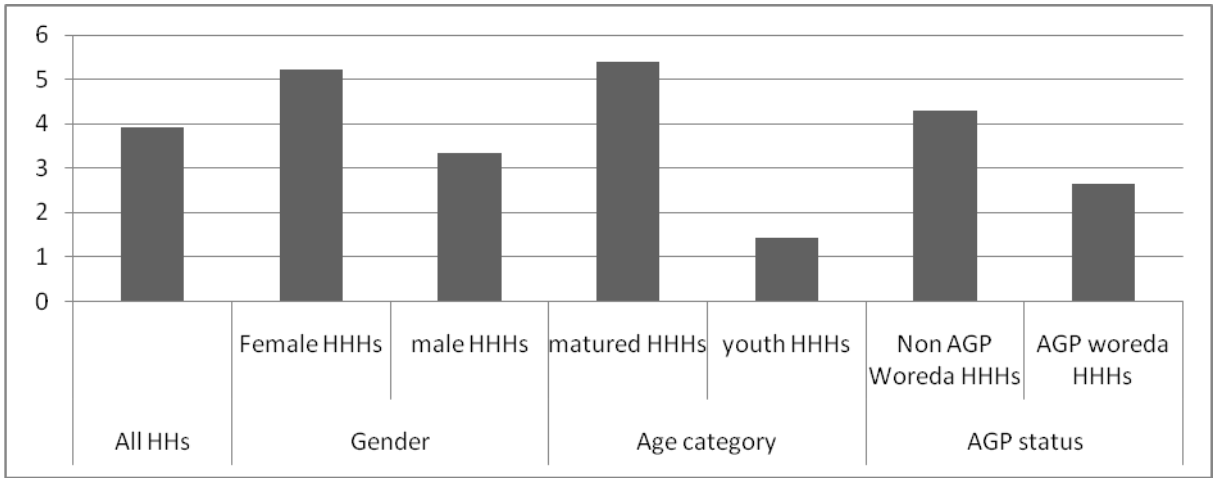
Group	Category	Fever	Coughing	Breathing problem	Diarrhoea
National	All HHs	32.2	36.7	15.0	25.2
	Female HHHs	33.5	38.3	15.0	24.6
	Male HHHs	32.0	36.5	15.0	25.3
	Mature HHHs	34.5	34.9	16.5	25.8
	Youth HHHs	30.7	38.0	14.0	24.7
AGP woredas	All HHs	30.1	34.6	12.5	26.2
	Female HHHs	37.9	43.2	17.6	31.2
	Male HHHs	28.8	33.1	11.6	25.3
	Mature HHHs	32.1	32.4	15.0	26.4
	Youth HHHs	28.8	36.0	10.8	26.0
Non-AGP woredas	All HHs	33.1	37.6	16.0	24.8
	Female HHHs	31.8	36.4	14.0	22.1
	Male HHHs	33.3	37.8	16.3	25.2
	Mature HHHs	35.5	35.8	17.1	25.5
	Youth HHHs	31.4	38.8	15.2	24.3

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stand respectively for 'Headed households' and 'Households'

Adult Health

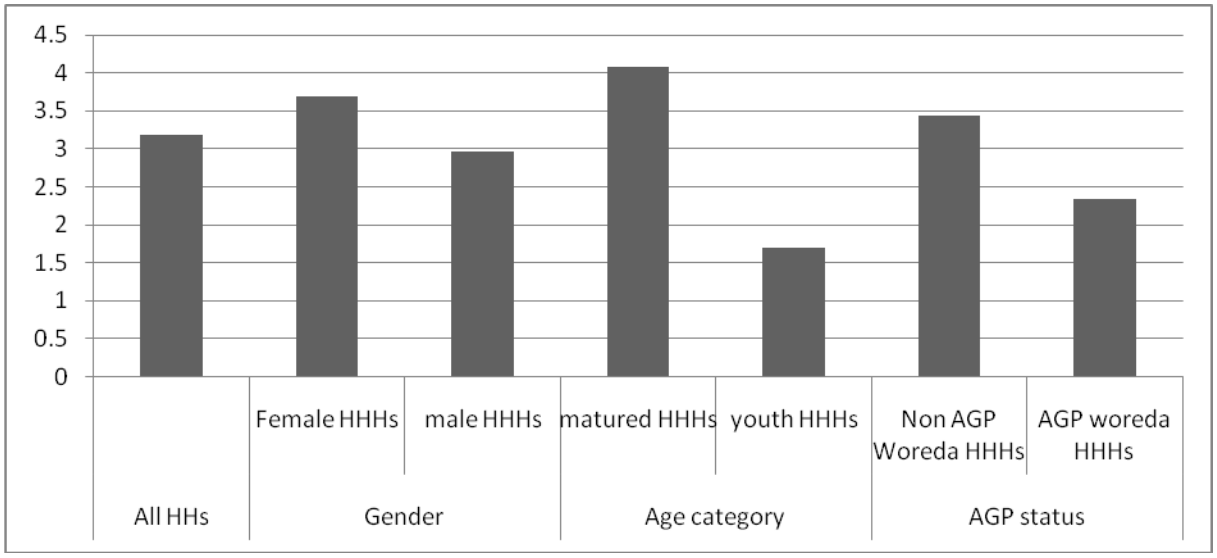
Respondents were asked about the health status of the adult household members (15 years or older). This mainly focused on whether such household members were not able to participate in any work, inside or outside of the household, due to any kind of hearing or vision problems or due to some sort of accident or injury. Figures 8.7.a and 8.7.b present the proportion of households that reported they had one or more such members. About 4 percent reported that at least one member of the household is unable to work due to hearing or vision problems. Relatively more (5.2 percent) female headed households have at least one member with hearing/vision problem compared to male headed households (3.3 percent). There are more households with mature heads with at least one member with hearing or vision problems relative to those with young heads. More households in non-AGP woredas (4.3 percent) have members unable to work due to hearing or vision problems when compared with those in AGP woredas (2.7 percent). A more or less similar pattern is observed in the case of households having members with disabilities due to accidents or injury.

Figure 8.7.a. Percentage of households with at least one member having a hearing or vision problem, by household categories and AGP status



Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stand respectively for 'Headed households' and 'Households'

Figure 8.7.b. Percentage of households with at least one member having a disability caused by injury or accident, by household categories and AGP status



Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stand respectively for 'Headed households' and 'Households'

Source of Water

Access to safe drinking water is limited in most rural areas of Ethiopia. As a result of this, households use water sources that are not safe. In this survey respondents were asked to indicate where they get the water they use for drinking and other purposes. The sources were then categorized into safe water sources or otherwise. Households are said to have access to safe drinking water sources if they obtain their drinking water primarily from protected wells, private/public standpipes, or rain water collection while sources such as lakes, rivers, or unprotected wells or springs are considered as unsafe. Table 8.7 presents the proportion of households with access to safe drinking water by household characteristics. Only less than half of the households surveyed (46 percent) have access to safe drinking water. Although male and mature headed households have slightly better access to safe water compared to their respective counterparts, the proportions are close to each other. The difference between non-AGP and AGP woredas stands at 8.4 percentage points, with more households having access to safe water in non-AGP woredas than in AGP woredas.

Slightly more than 44 percent of the households use the same water source for drinking as well as for other purposes and this holds true among both female and male headed households. Slightly more households with younger heads use the same water source for drinking and other purposes at

45 percent compared to the 44 percent households with mature heads. The proportion of households using the same water source for all purposes is significantly large at 54 percent in AGP woredas relative to the 41 percent in non-AGP woredas.

Although about 59 percent of the households do not have access to safe drinking water, only about 10 percent boil the water before drinking. This practice is more prevalent in male headed households relative to female headed households, with a difference of 1.5 percent, while mature and young headed households perform in a more similar way. The proportion of households that practice boiling drinking water is larger in AGP woredas relative to non-AGP woredas.

Table 8.7. Source of drinking water and water treatment, by household categories and AGP status

Group	Category	Access to safe drinking water	Uses same water source for drinking and other purposes	Household has a habit of boiling water
National	All HHs	41.6	44.4	9.7
	Female HHHs	41.4	44.4	8.6
	Male HHHs	41.7	44.4	10.1
	Mature HHHs	41.6	43.8	9.7
	Youth HHHs	41.5	45.4	9.6
AGP-woredas	All HHs	35.2	54.3	12.2
	Female HHHs	36.4	41.3	13.7
	Male HHHs	34.7	41.3	11.5
	Mature HHHs	36.3	40.3	11.5
	Youth HHHs	33.4	43.1	13.4
Non-AGP woredas	All HHs	43.6	41.3	8.9
	Female HHHs	42.9	41.3	7.0
	Male HHHs	43.9	41.3	9.7
	Mature HHHs	43.4	54.9	9.2
	Youth HHHs	43.9	53.1	8.4

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stand respectively for 'Headed households' and 'Households'

8.4. Summary

Most rural households rely on their own production to satisfy their food requirements. Reliance on own-produced food varies mainly with cropping seasons. The proportion of households that

indicated own-produced food as their major food source is largest during and after harvest and is smallest during the raining and planting months of the main agricultural season. During these latter months a considerable proportion of households had to purchase food or obtained it from other sources to cover the food deficit. Moreover, the data indicate that an average household was food insecure for 1.2 months during the year. Male headed and households in AGP woredas performed relatively better.

The data also indicate that the items household members consumed were less than half as diverse as required for a healthy diet. Although dietary diversity varied among the different categories and woredas, the variation was small. Long- and short-term nutritional status of children under the age of 5 was examined using anthropometric measures collected in the survey. The results indicate a prevalence of severe stunting, wasting, and underweight in 27, 6, and 10 percent of the children. The proportion with moderate stunting, wasting, and underweight was 46, 12, and 27 percent, respectively. Children in households with female and mature heads and those in non-AGP woredas performed better in all or most measures. Diarrhoea, coughing, fever, and breathing problems affected 25, 37, 32, and 15 percent of the children in the 2 weeks prior to the survey.

Less than half of the households have access to safe drinking water and more than 40 percent use the same water for drinking and other purposes. While there were differences among household categories in access to safe water the differences were small. Although about 58 percent of the households do not have access to safe drinking water, less than 10 percent boil the water they drink. This practice is more prevalent in male and mature headed households.

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Annexes

Annex A: AGP Details

Project implementation period: Start December 1, 2010; End: September 30, 2015
Expected Effectiveness Date: December 1, 2010
Expected Closing Date: September 30, 2015

Annex Table A.1.1. List of AGP woredas

Region	No	Zone	AGP woreda	Region	No	Zone	AGP woreda
Oromiya	1	North Shewa	Hidebu Habote	Amhara	1	West Gojam	Jabi-tehnane
	2		G/Jarso		2		Bure
	3		Yaya Gulele		3		Wenebrema
	4	West Shewa	Dendi		4		Debube Achefer
	5		Ambo		5		Semin
	6		Toke Kutaye		6		Bahir-DarKetma Zuria
	7	South West Shewa	Bacho (Tulu Bolo)		7	East Gojam	Dejene
	8		Wenchi		8		Enmaye
	9		Weliso		9		Debre Elias
	10	East Shewa	Ada'a		10	Awi	Anikasha (Ankasha)
	11		Liban		11		Gwangwa (Guangua)
	12		Gimbichu		12		Danegela (Dangila)
	13	East Wollega	Gutu Gida		13		Jawi
	14		Diga		14	Semen Gondar	Taqusa
	15		Wayu Tuqa		15		Metma (Metema)
	16	Horo Guduru Wollega	Guduru		16		Qura
	17		Jima-Genet		17		Alefa
	18		Horo		18	Debub Gondar	Dera
	19	Illu Aba Bora	Gechi		19	North Shewa	Efratana- Gidim
	20		Bedele		20		Anitsokiya-Gemza
	21		Dhedhesa		21		Qewt
	22	Jimma	Goma		22		Tarma Ber
	23		Gera	SNNPR	1	Kaffa	Chena
	24		Limu saqaa		2		Decha
	25	Arsi	Limu-Bilbilo		3	Gurage	Enemor na ener
	26		Shirka		4		Endegeng (Endegegn)
	27		Munesa		5	Silte	Merab Azernet
	28	West Arsi	Dodola		6		Misrak Azernet
	29		Adaba		7	Sidama	Gorche (Shebedino)
	30		Kofele		8		Malga (Malga)
	31	Bale Zone	Sinana		9		Wondo Genet
	32		Gasera		10	Dawro	Esira (Isara)
	33		Agarfa		11		Konta
	34	Special	Welmera		12	Debub Omo	Debub Ari
Tigray	1	Southern	Alamata		13		Semen Ari
	2		Raya/Azebo		14	Bench Maji	Debub Bench
	3		Ofla		15		Sheye bench
	4		Enidemhoni		16	Gedeo	Bule
	5	Western	Tsegde		17		Gedeb
	6		Welqayt		18	Special woredas	Yem
	7		Qfta humra		19		Besketo
	8	North Western	Tahtaye-adiyabo				

Source: World Bank (September, 2010)

Annex Table A.1.2. Sampled AGP-woredas

Region	Zone	Woreda
Tigray	North Western Tigray	Tahitay Adiyabo
Tigray	South Tigray	Endamehone
Tigray	South Tigray	Rya Azebo
Tigray	South Tigray	Alamata
Tigray	South Tigray	Ofla
Tigray	Western Tigray	Qafta Humera
Tigray	Western Tigray	Welqayet
Tigray	Western Tigray	Tsegede
Amhara	North Gondar	Metema
Amhara	North Gondar	Alefa
Amhara	North Gondar	Takusa
Amhara	South Gonder	Dera
Amhara	North Shewa	Antsokiya Gemza
Amhara	North Shewa	Yifratana Gidim
Amhara	North Shewa	Kewet
Amhara	East Gojjam	Enemay
Amhara	East Gojjam	Debere Elias
Amhara	East Gojjam	Dejen
Amhara	West Gojjam	Bahir Dar Zuriya
Amhara	West Gojjam	Jebitenan
Amhara	West Gojjam	Bure
Amhara	West Gojjam	South Achefer
Amhara	Awi	Dengila
Amhara	Awi	Ankasha Guagusa
Amhara	Awi	Guangua
Amhara	Awi	Jawi
Oromiya	East Wellega	Wayu Tuqa
Oromiya	Ilu Aba Bora	Gechi
Oromiya	Ilu Aba Bora	Bedele Zuriya
Oromiya	Jimma	Limu Seka
Oromiya	Jimma	Gomma
Oromiya	West Shewa	Ambo
Oromiya	West Shewa	Dendi
Oromiya	North Shewa	Hidabu Abote
Oromiya	North Shewa	Yaya Gulele
Oromiya	East Shewa	Adea
Oromiya	Arsi	Shirka
Oromiya	Arsi	Limuna Bilbilo
Oromiya	Bale	Agarfa
Oromiya	Bale	Sinana
Oromiya	South West Shewa	Weliso
Oromiya	West Arsi	Kofele
Oromiya	West Arsi	Dodola
Oromiya	Horo Gudru Wellega	Guduru
SNNPR	Gurage	Endegeng
SNNPR	Gurage	Enemor na ener
SNNPR	Sidama	Gorche
SNNPR	Sidama	Malga
SNNPR	Sidama	Wendo Genet
SNNPR	Gedeo	Bule
SNNPR	Gedeo	Gedeb
SNNPR	South Omo	South Ari
SNNPR	Kefa	Decha
SNNPR	Kefa	Chena
SNNPR	Bench Maji	Southern Bench
SNNPR	Bench Maji	Shay Bench
SNNPR	YEM	Yem Special
SNNPR	Dawuro	Esira
SNNPR	Basketo	Basketo
SNNPR	Konta	Konta Special
SNNPR	Siliti	Mirab Azenet

Annex Table A.1.3. Sampled Non-AGP woredas

Region	Zone	Woreda
Tigray	North Western Tigray	Asegede Tsimbila
Tigray	Central Tigray	Ahiferom
Tigray	Eastern Tigray	Saesi Tsadamba
Tigray	South Tigray	Enderta
Amhara	North Gondar	Dembia
Amhara	South Gonder	Simada
Amhara	South Wolo	Mekdela
Amhara	South Wolo	Legamibo
Amhara	North Shewa	Mojana Wedera
Amhara	East Gojjam	Enarj Enawuga
Amhara	West Gojjam	Dembecha
Amhara	West Gojjam	Gonji Kolela
Amhara	Argoba Special woreda	Argoba
Oromiya	West Wellega	Ayira
Oromiya	Jimma	Limu Kosa
Oromiya	West Shewa	Jeldu
Oromiya	North Shewa	Abichugna
Oromiya	East Shewa	Dugda
Oromiya	Arsi	Tiyo
Oromiya	Bale	Dinsho
Oromiya	Qeleme Wellega	Dale Wabera
Oromiya	Horo Gudru Wellega	Jima Rare
SNNPR	Gurage	Muhur NA Aklil
SNNPR	Kembata Timbaro	Anigacha
SNNPR	Sidama	Aleta Wondo
SNNPR	Sidama	Chire
SNNPR	Wolayita	Damot Gale
SNNPR	South Omo	Gelila
SNNPR	Kefa	Gesha
SNNPR	Gamo Gofa	Chencha
SNNPR	Amaro Special	Amaro Special Wereda
SNNPR	Alaba	Alaba

Annex B: Tables

Annex Table B.2.1. Descriptives statistics on household head's age, by region and AGP status

Group	Category	Statistics				
		Mean	SD	Median	Maximum	Minimum
Tigray	All HHS	43	14.6	40	97	18
	AGP woredas	42.4	14.3	40	97	18
	Non-AGP woredas	44	14.9	40	86	20
Amhara	All HHS	43.6	15.4	40	98	18
	AGP woredas	42.7	14.9	39	90	18
	Non-AGP woredas	43.9	15.6	40	98	19
Oromiya	All HHS	42.9	15.9	40	98	16
	AGP woredas	43.8	16.2	40	98	16
	Non-AGP woredas	42.6	15.8	40	89	17
SNNP	All HHS	42.6	15.3	38	97	15
	AGP woredas	41.3	14	38	91	15
	Non-AGP woredas	42.9	15.5	39	97	15

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHs' stands for 'Households'. SD represents 'Standard Deviation'.

Annex Table B.2.2. Proportion of household head's marital status, by region and AGP status

Group	Category	Married, single spouse	Single	Divorced	Widowed	Separated	Married, more than one spouse
Tigray	All HHS	65.5	1.7	14.8	12.9	0.6	4.6
	AGP woredas	63.6	1.3	16.4	11.7	0.7	6.2
	Non-AGP woredas	68.7	2.4	12.0	14.8	0.4	1.7
Amhara	All HHS	67.1	0.7	11.0	17.0	1.7	2.4
	AGP woredas	67.1	0.8	11.3	15.6	1.8	3.5
	Non-AGP woredas	67.2	0.7	10.9	17.5	1.7	2.0
Oromiya	All HHS	67.5	2.8	3.3	15.6	1.8	9.0
	AGP woredas	66.8	2.7	4.5	18.2	1.0	6.8
	Non-AGP woredas	67.7	2.8	3.0	14.7	2.1	9.7
SNNP	All HHS	72.3	3.5	1.9	14.1	0.6	7.6
	AGP woredas	69.8	3.1	1.7	15.0	1.1	9.3
	Non-AGP woredas	72.9	3.6	1.9	13.9	0.6	7.2

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHs' stands for 'Households'.

Annex Table B.2.3. Average household size, by region and AGP status

Group	Category	1-2	3-4	5-6	7-8	9-10	11 or more	Average
Tigray	All HHS	18.5	33.6	29.0	14.9	3.7	0.4	4.6
	AGP woredas	20.6	34.6	28.4	12.8	3.4	0.3	4.4
	Non-AGP woredas	15.0	31.7	30.1	18.4	4.2	0.5	4.8
Amhara	All HHS	18.4	38.8	26.8	11.2	4.3	0.5	4.4
	AGP woredas	18.4	37.0	27.5	13.2	3.6	0.3	4.4
	Non-AGP woredas	18.4	39.3	26.6	10.6	4.6	0.5	4.4
Oromiya	All HHS	12.1	33.6	29.2	17.2	5.8	2.1	5.1
	AGP woredas	14.9	34.8	28.0	15.6	5.8	0.9	4.8
	Non-AGP woredas	11.2	33.2	29.6	17.7	5.7	2.5	5.1
SNNP	All HHS	12.5	30.5	34.5	17.1	4.7	0.8	5.0
	AGP woredas	14.5	33.0	31.8	16.8	3.6	0.3	4.8
	Non-AGP woredas	12.0	29.9	35.1	17.1	4.9	0.9	5.0

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHs' stands for 'Households'.

Annex Table B.2.4. Percentage of households with members of different age groups, by region and AGP status

Group	Category	under 5	Ages 5-15	Ages 16-24	Ages 25-34	Ages 35-59	Ages 60 or more	Average age (all members)	Average age(5 years or older
Tigray	All HHS	19.4	29.3	17.0	14.0	15.6	4.7	21	24.7
	AGP woredas	18.3	29.2	17.9	14.3	16.0	4.3	21	24.5
	Non-AGP woredas	21.0	29.4	15.6	13.6	15.0	5.4	21	25
Amhara	All HHS	15.4	29.7	17.5	15.7	16.0	5.8	22.5	25.6
	AGP woredas	16.2	29.9	17.2	15.8	15.9	4.9	21.8	24.9
	Non-AGP woredas	15.1	29.6	17.5	15.6	16.0	6.0	22.7	25.8
Oromiya	All HHS	18.2	31.6	16.8	13.8	14.3	5.3	20.9	24.2
	AGP woredas	16.1	32.9	17.5	13.4	14.4	5.6	21.3	24.4
	Non-AGP woredas	18.8	31.2	16.6	13.9	14.3	5.2	20.7	24.2
SNNP	All HHS	18.6	33.5	13.9	14.4	15.0	4.6	20.5	24.2
	AGP woredas	19.3	34.5	13.1	13.4	16.2	3.5	19.8	23.5
	Non-AGP woredas	18.5	33.3	14.1	14.6	14.8	4.8	20.7	24.3

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHs' stands for 'Households'.

Annex Table B.2.5. Percentage of households with children under 5 years old of different age groups, by household categories and AGP status

Group	Category	0-11 months	12-23 months	24-35 months	36-47 months	48-60 months
Tigray	All HHS	19.7	19.5	16.9	23.0	20.9
	AGP woredas	20.2	18.9	17.3	22.6	20.9
	Non-AGP woredas	18.9	20.2	16.3	23.5	21.0
Amhara	All HHS	17.5	19.5	17.1	21.4	24.5
	AGP woredas	18.7	20.5	20.2	20.5	20.1
	Non-AGP woredas	17.1	19.2	16.1	21.7	25.9
Oromiya	All HHS	20.8	18.8	18.2	21.8	20.4
	AGP woredas	19.6	20.3	17.3	19.6	23.3
	Non-AGP woredas	21.2	18.4	18.5	22.4	19.6
SNNP	All HHS	20.7	15.8	19.7	22.1	21.7
	AGP woredas	20.4	18.5	17.7	23.3	20.2
	Non-AGP woredas	20.8	15.2	20.1	21.8	22.1

Source: Authors' calculations using AGP baseline survey data.
Note: 'HHs' stands for 'Households'.

Annex Table B.2.6. Percentage of household heads with different education level, by region and AGP status

Group	Category	Illiterate	Informal education	Primary education	Secondary education	Higher education
Tigray	All HHS	62.7	10.0	25.1	2.1	0.03
	AGP woredas	68.0	9.3	21.3	1.4	0.04
	Non-AGP woredas	53.7	11.3	31.6	3.4	-
Amhara	All HHS	64.5	18.7	15.8	0.8	0.2
	AGP woredas	66.5	16.4	15.5	1.4	0.2
	Non-AGP woredas	63.9	19.4	15.9	0.6	0.1
Oromiya	All HHS	45.3	13.1	37.4	3.0	1.2
	AGP woredas	61.6	5.0	30.1	3.0	0.4
	Non-AGP woredas	39.9	15.8	39.8	3.0	1.4
SNNP	All HHS	56.8	1.6	36.9	4.0	0.7
	AGP woredas	63.0	1.6	32.6	2.2	0.5
	Non-AGP woredas	55.4	1.6	37.9	4.4	0.8

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHs' stands for 'Households'.

Annex Table B.2.7.Percentage of household heads' occupation of by region and AGP status

Group	Category	Farmer or family farm worker	Domestic work	Manual work	Trained worker	Crafts person	Self-employed	Employed in service sector	Student	Other
Tigray	All HHS	89.7	5.1	1.2	-	0.2	1.0	0.4	0.1	2.3
	AGP woredas	89.5	5.7	0.8	-	0.2	1.3	0.6	0.1	1.8
	Non-AGP woredas	90.1	4.1	1.9	-	0.2	0.5	0.2	0.2	3.0
Amhara	All HHS	88.6	7.7	0.2	0.02	0.3	1.1	0.2	0.3	1.6
	AGP woredas	90.0	5.2	0.8	0.1	0.3	1.1	0.3	0.2	2.1
	Non-AGP woredas	88.2	8.5	-	-	0.3	1.2	0.1	0.3	1.5
Oromiya	All HHS	90.9	4.2	0.6	0.04	0.4	0.4	0.6	0.0	2.7
	AGP woredas	90.5	4.7	1.0	0.2	0.2	0.5	0.3	0.2	2.3
	Non-AGP woredas	91.1	4.0	0.5	-	0.5	0.3	0.7	-	2.9
SNNP	All HHS	85.7	10.4	0.3	0.1	0.2	0.8	0.4	0.6	1.4
	AGP woredas	86.0	9.2	0.7	0.1	0.5	0.8	0.7	0.7	1.2
	Non-AGP woredas	85.6	10.7	0.3	0.1	0.1	0.8	0.4	0.6	1.4

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHs' stands for 'Households'.

Annex Table B.2.8.Percentage of household heads that used different materials to construct their dwelling, by region and AGP status

Region	Category	Roof				Floor			
		Plastic sheeting	Thatched	Mud/sand /stone, etc.	Corrugated metal	Earth	Cow dung mixed with soil	Concrete/ stone/ cement	Tile
Tigray	All HHS	2.4	39.1	24.3	34.2	65.7	33.1	0.9	0.2
	AGP woredas	2.8	53.7	11.1	32.4	61.6	38.0	0.2	0.3
	Non-AGP woredas	1.6	14.0	47.1	37.2	72.8	24.8	2.2	0.2
Amhara	All HHS	2.1	40.4	-	57.5	42.2	57.5	0.3	0.03
	AGP woredas	1.5	61.7	0.3	36.5	54.9	44.3	0.7	0.1
	Non-AGP woredas	1.1	34.4	-	64.6	38.4	61.5	0.1	-
Oromiya	All HHS	1.5	61.3	0.3	37.0	73.9	25.6	0.3	0.1
	AGP woredas	1.4	59.9	0.1	38.6	63.7	36.0	0.3	-
	Non-AGP woredas	1.5	61.7	0.3	36.5	77.2	22.3	0.3	0.1
SNNP	All HHS	2.3	80.2	2.7	14.8	62.5	36.2	1.0	0.3
	AGP woredas	1.3	76.0	4.7	18.1	39.6	57.7	2.2	0.6
	Non-AGP woredas	2.5	81.2	2.2	14.1	67.6	31.4	0.8	0.2

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHs' stands for 'Households'.

Annex Table B.2. 9. Percentage of household heads' asset ownership structure, by region and AGP status

Group	Category	Stove	Sofa	Bed	Mobile	Radio/ Television	Jewelry	Table/ chair	Wheel-barrow cart	Car
	All HHS	27.6	3.9	42.4	12.9	25.8	26.6	2.8	1.4	0.2
	AGP woredas	28.2	4.2	46.4	10.6	21.2	21.4	3.5	1.8	0.2
Tigray	Non-AGP woredas	26.7	3.4	35.6	16.9	33.6	35.7	1.7	0.7	0.3
	All HHS	17.2	3.3	40.8	5.5	19.5	27.5	1.9	1.4	0.2
	AGP woredas	21.6	5.3	48.1	9.4	24.8	34.2	4.6	2.9	0.5
Amhara	Non-AGP woredas	15.9	2.7	38.7	4.3	17.9	25.5	1.1	1.0	0.1
	All HHS	16.1	4.0	40.9	18.8	38.0	24.4	12.4	5.6	2.7
	AGP woredas	24.8	4.3	40.4	16.6	37.3	25.4	9.2	4.2	1.6
Oromiya	Non-AGP woredas	13.3	4.0	41.1	19.5	38.2	24.1	13.4	6.0	3.0
	All HHS	2.9	1.8	15.7	11.5	28.7	12.0	9.7	3.9	1.3
	AGP woredas	4.9	1.8	19.0	10.2	30.3	17.8	9.2	3.9	0.6
SNNP	Non-AGP woredas	2.5	1.9	15.0	11.8	28.3	10.6	9.8	3.9	1.5

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHs' stands for 'Households'.

Annex Table B.2.10. Average animal ownership by animal type, by region and AGP status

Group	Category	Calves, young bulls, and heifers	Bulls	Oxen	Cows	Sheep and goats	Pack animals	Camel	TLU
	All HHS	1.548	0.189	1.152	1.11	2.489	0.553	0.03	3.401
	AGP woredas	1.834	0.216	1.284	1.295	2.599	0.569	0.041	3.872
Tigray	Non-AGP woredas	1.289	0.171	1.095	0.957	2.653	0.603	0.017	3.092
	All HHS	1.19	0.119	1.004	0.639	2.334	0.598	0.005	2.66
	AGP woredas	1.708	0.129	1.296	0.913	1.583	0.514	0.012	3.311
Amhara	Non-AGP woredas	1.105	0.123	0.975	0.594	2.698	0.659	0.002	2.621
	All HHS	1.911	0.233	1.252	1.191	2.621	0.898	0	4.083
	AGP woredas	2.085	0.316	1.419	1.265	2.497	0.925	0.000	4.401
Oromiya	Non-AGP woredas	2.012	0.226	1.301	1.266	2.88	0.963	0.000	4.318
	All HHS	1.505	0.129	0.413	1.075	1.74	0.288	0	2.576
	AGP woredas	1.698	0.236	0.566	1.195	1.746	0.235	0	2.957
SNNP	Non-AGP woredas	1.649	0.121	0.43	1.181	1.956	0.336	0	2.811

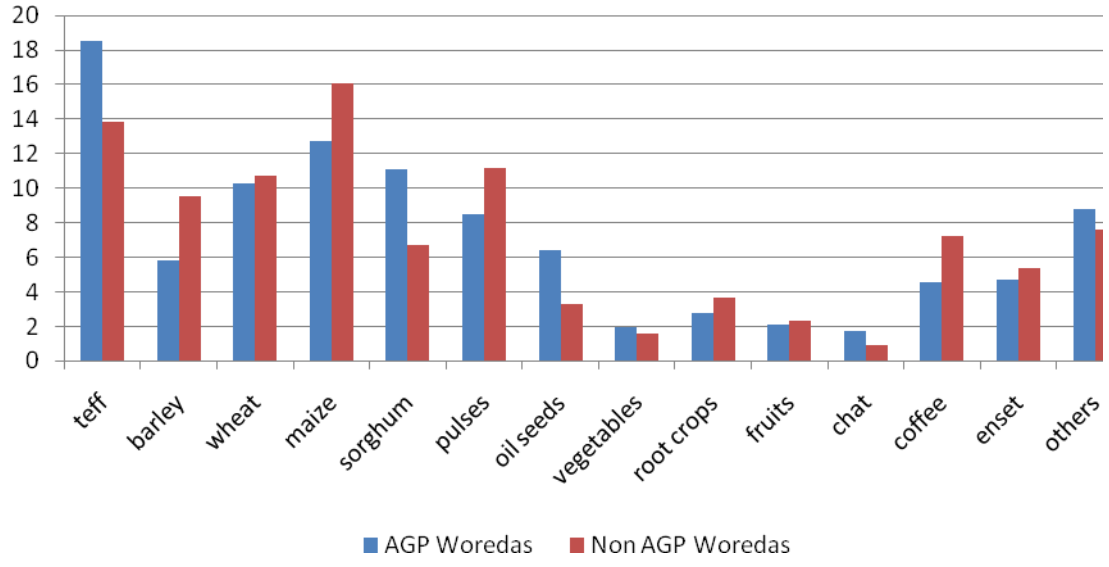
Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Annex Table B.2.11. Average animal ownership by animal type, by region and AGP status (average for those who own the respective animals)

Group	Category	Calves, young bulls, and heifers	Bulls	Oxen	Cows	Sheep and goats	Pack animals	Camel	TLU
	All HHS	2.726	1.549	1.801	1.938	6.244	1.373	1.516	3.401
	AGP woredas	2.992	1.64	1.887	2.031	6.371	1.423	1.442	3.872
Tigray	Non-AGP woredas	2.252	1.387	1.654	1.757	6.048	1.301	1.933	3.092
	All HHS	2.015	1.443	1.634	1.393	5.087	1.603	1.375	2.66
	AGP woredas	2.62	1.393	1.885	1.671	4.054	1.47	1.832	3.311
Amhara	Non-AGP woredas	1.819	1.46	1.551	1.293	5.327	1.638	1	2.621
	All HHS	2.801	1.478	2.053	1.95	4.93	2.125	-	4.083
	AGP woredas	2.808	1.364	2.065	1.932	4.457	1.924	-	4.401
Oromiya	Non-AGP woredas	2.798	1.538	2.049	1.956	5.086	2.198	-	4.318
	All HHS	2.146	1.326	1.457	1.681	3.443	1.429	-	2.576
	AGP woredas	2.186	1.592	1.578	1.684	3.055	1.465	-	2.957
SNNP	Non-AGP woredas	2.136	1.236	1.425	1.68	3.533	1.424	-	2.811

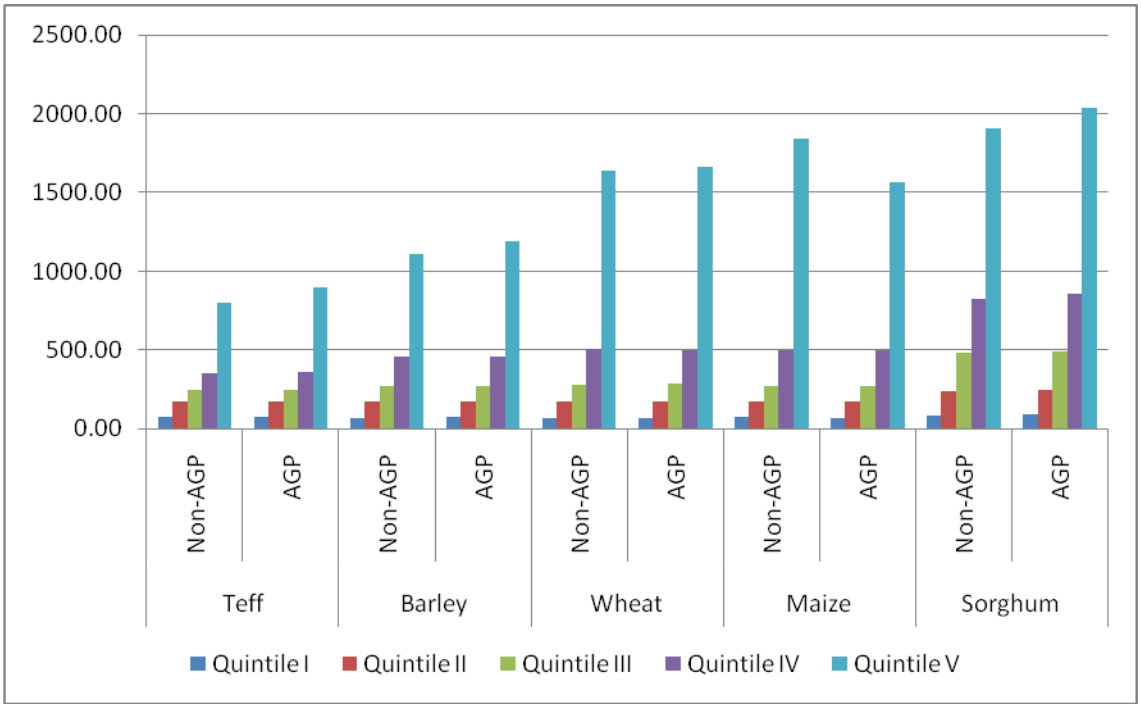
Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Annex Figure B.4.1. Share of crops in total acreage, by AGP status



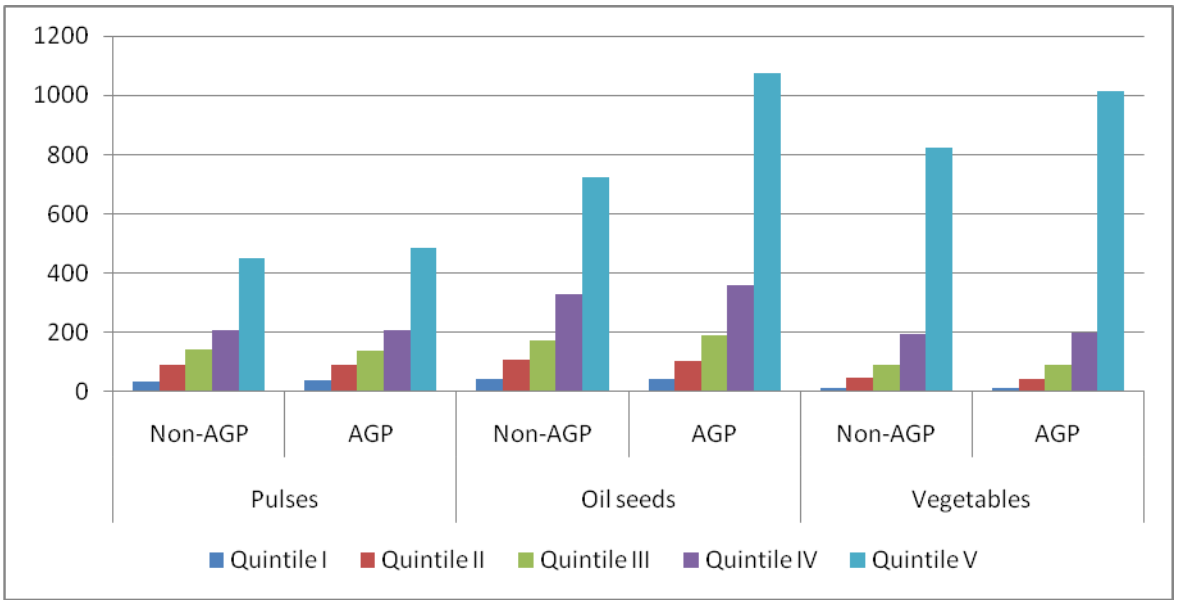
Source: Authors' calculations using data from the AGP Baseline Survey 2011

Annex Figure B.4.2. Average household cereals production, by output quintiles and AGP status



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Annex Figure B.4.3. Average household production, by output quintile and AGP status



Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Annex Table B.4.1. Mean Difference (MD) test – Average output (in kg), by household head characteristics, AGP status, and crop classification

Group	Category	Statistic	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
National	Male HHHs vs. Female HHHS	MD	103	41	72	273	225	47	39	16	190	-152	59	-9	74
		Sig.	**			***	**	***	***		***				
	Mature HHHs vs. Youth HHHs	MD	48	-26	48	20	68	12	0	36	91	51	15	40	113
		Sig.												**	
	AGP HHs vs. Non-AGP HHs	MD	41	-24	55	-102	318	54	196	-36	-26	-24	131	5	-20
		Sig.					***	***	**						
AGP woredas	Male HHHs vs. Female HHHS	MD	80	29	79	148	301	3	60	-21	160	57	63	29	-1
		Sig.	**			***	***		**		***				
	Mature HHHs vs. Youth HHHs	MD	144	52	-14	6	113	15	33	99	216	5	-99	57	10
		Sig.	***								***			**	
Non-AGP woredas	Male HHHs vs. Female HHHS	MD	114	45	70	312	185	56	27	35	199	-217	61	-18	98
		Sig.	***			***	***	***			***				
	Mature HHHs vs. Youth HHHs	MD	14	-38	64	26	84	7	-2	-7	55	70	63	37	147
		Sig.													

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' and 'HHs' stand respectively for 'Household Heads' and 'Households'. 'MD' and 'Sig.' stand for 'Mean Difference' and 'Significance', respectively. 'Mean difference' refers to the difference between the mean values of the variable in question within the groups being compared. 'Significance' reports the result of a corresponding (two-tailed) test of whether such difference is statistically different from zero. ***, ** and * indicate that the corresponding mean difference is statistically significant at 1 percent, 5 percent and 10 percent, respectively.

Annex Table B.4.2. Average output (kg) by region and AGP status

Region	Group	Statistic	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
Tigray	All Households	Mean	314	328	334	172	926	140	410	297	515	82	170	18	-
		Median	200	200	217	100	700	100	300	100	150	100	60	14	-
		SD	404	336	300	272	859	149	421	721	975	32	336	15	-
	AGP Households	Mean	447	313	366	210	1007	174	448	247	394	100	178	19	-
		Median	300	225	280	100	800	100	300	100	150	100	60	14	-
		SD	521	247	312	334	842	166	445	784	529	0	342	14	-
	Non-AGP Households	Mean	189	342	307	115	655	88	237	374	662	71	0	16	-
		Median	150	200	200	100	500	50	200	125	100	100	0	7	-
		SD	172	404	287	104	859	98	211	604	1314	37	0	16	-
Amhara	All Households	Mean	350	364	330	632	646	189	194	261	426	183	34	49	86
		Median	250	200	210	300	450	125	100	50	200	21	10	15	10
		SD	334	411	403	940	797	210	345	566	655	588	65	158	93
	AGP Households	Mean	391	315	587	606	827	233	366	464	351	230	49	66	86-
		Median	280	200	280	350	500	150	150	140	210	21	22	25	10-
		SD	384	320	897	683	1005	311	501	748	470	680	73	199	93-
	Non-AGP Households	Mean	335	372	296	646	591	183	86	61	450	54	1	23	-
		Median	240	200	200	300	420	120	50	40	200	100	1	7	-
		SD	314	424	261	1054	714	192	75	60	702	49	0	46	-
Oromiya	All Households	Mean	330	555	682	669	478	181	134	310	582	211	142	131	347
		Median	200	400	400	350	200	100	100	105	250	48	40	50	100
		SD	430	535	899	1041	709	200	151	613	903	1015	378	224	811
	AGP Households	Mean	323	526	595	467	668	226	202	186	653	193	232	150	473
		Median	230	350	300	200	300	150	140	84	250	50	40	60	100
		SD	331	576	836	929	854	232	273	327	1122	914	642	311	1088
	Non-AGP Households	Mean	335	562	725	716	415	161	118	361	566	215	101	128	218-
		Median	200	400	400	400	200	100	100	140	280	48	40	50	100-
		SD	482	523	926	1060	642	180	98	690	846	1033	128	207	299-
SNNP	All Households	Mean	175	183	293	385	161	129	84	247	358	90	203	127	381-
		Median	100	100	150	200	100	96	50	100	200	21	50	50	150-
		SD	179	274	704	879	181	195	69	367	508	216	721	193	777-
	AGP Households	Mean	199	247	219	447	328	151	117	167	290	75	320	135	320
		Median	125	100	150	200	200	100	100	80	150	15	100	50	150
		SD	258	434	252	726	317	249	81	324	443	207	749	283	523
	Non-AGP Households	Mean	171	160	309	371	121	126	62	279	376	95	166	125	397
		Median	100	100	150	200	100	96	28	105	250	25	24	57	147
		SD	162	181	764	911	91	184	48	379	522	219	707	162	828

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'SD' represents 'Standard Deviation'.

Annex Table B.4.3. Mean Difference test - Average yield by household head characteristics, AGP status and crop classification

Group	Category	Statistic	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Root crops	Coffee	Enset
National	Male HHHs vs. Female HHHS	MD	130	178	167	238	211	106	13	1896	187	-887
		Sig.	*	*	*	***	***			***		
	Mature HHHs vs. Youth HHHs	MD	17	-244	256	-148	-312	-142	41	1140	387	-76
		Sig.										
	AGP HHs vs. Non-AGP HHs	MD	60	-90	70	-158	214	220	260	-19	587	-2311
		Sig.					*		***			
AGP woredas	Male HHHs vs. Female HHHS	MD	34	-75	84	164	193	38	89	1580	-192	565
		Sig.					*		**	***		
	Mature HHHs vs. Youth HHHs	MD	229	-253	165	-111	-687	69	-161	1304	-286	1397
		Sig.	***							*		**
Non-AGP woredas	Male HHHs vs. Female HHHS	MD	175	243	195	262	210	117	-20	1976	293	-1316
		Sig.	*	**		***	***			***		
	Mature HHHs vs. Youth HHHs	MD	-53	-237	280	-156	-82	-193	160	1092	517	-569
		Sig.							**			

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

*N*otes: 'HHHs' and 'HHs' stand respectively for 'Household Heads' and 'Households'. 'MD' and 'Sig.' stand for 'Mean Difference' and 'Significance', respectively. 'Mean difference' refers to the difference between the mean values of the variable in question within the groups being compared. 'Significance' reports the result of a corresponding (two-tailed) test of whether such difference is statistically different from zero. ***, ** and * indicate that the corresponding mean difference is statistically significant at 1 percent, 5 percent and 10 percent, respectively.

Annex Table B.4.4. Average crop yield (kg/ha), by AGP status and region

Region	Group	Statistic	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oilseeds	Vegetables	Roots	Fruits	Chat	Coffee	Enset
Tigray	All Households	Mean	765	1077	1156	1049	1090	914	459	6372	3977	912	10895	352	-
		Median	600	800	833	686	800	667	320	1400	1212	667	900	51	-
		SD	713	828	937	1269	1007	1502	615	19663	6488	555	22930	741	-
	AGP Households	Mean	790	1122	1247	1097	1192	843	476	6503	3730	528	11438	214	-
		Median	600	800	1000	667	933	640	320	1200	1200	400	900	51	-
		SD	686	921	1002	1342	1081	779	665	24282	5846	133	23362	262	-
	Non-AGP Households	Mean	740	1031	1079	975	748	1021	380	6174	4276	1139	0	524	-
		Median	587	800	800	720	600	800	280	2000	1500	1600	0	32	-
		SD	735	721	870	1145	592	2179	276	8938	7178	584	0	1048	-
Amhara	All Households	Mean	1211	1683	1648	2470	1155	1252	655	4729	6595	74019	2352	1587	1008
		Median	800	867	933	1500	900	600	400	1280	3200	1600	246	320	152
		SD	1096	1903	1852	2443	936	1807	826	15679	8610	317841	6507	3902	1047
	AGP Households	Mean	1119	1595	2109	2067	1302	1373	849	7630	6810	94387	3426	2212	1008
		Median	800	1067	1400	1500	960	800	480	1400	3413	1600	250	320	152
		SD	1084	1563	2113	1921	1326	1897	1098	21781	8681	368612	7619	4902	1047
	Non-AGP Households	Mean	1243	1697	1588	2705	1111	1236	534	1873	6526	17665	5	651	-
		Median	840	800	840	1600	900	600	320	1000	3200	33333	5	320	-
		SD	1098	1951	1806	2674	775	1794	560	2070	8586	16598	0	750	-
Oromiya	All Households	Mean	837	1588	1466	1754	1218	1149	456	11196	4764	24196	17297	1037	5517
		Median	667	1200	1120	1371	840	800	400	1800	3000	720	1800	240	1600
		SD	714	1285	1193	1460	1160	1114	412	34251	6208	105137	64124	4004	12091
	AGP Households	Mean	977	1600	1515	1721	1501	1404	675	6805	5126	16536	3654	1131	4769
		Median	800	1200	1133	1120	1120	1000	400	1600	3000	1667	720	267	2000
		SD	814	1473	1318	1715	1427	1284	776	37812	6664	48184	20165	3362	12648
	Non-AGP Households	Mean	749	1584	1441	1762	1124	1038	404	12987	4683	25684	23458	1023	6281
		Median	600	1200	1120	1400	800	800	384	2000	3000	667	2400	240	1600
		SD	626	1230	1124	1394	1039	1011	235	32517	6099	112854	75254	4091	11444
SNNP	All Households	Mean	549	750	1053	1070	895	689	519	25512	2909	2898	10728	1322	5191
		Median	400	556	800	750	800	417	375	2000	1750	280	320	500	850
		SD	539	724	1089	1194	696	1036	348	83645	3786	25662	70599	4077	21303
	AGP Households	Mean	469	783	721	721	615	604	384	14409	2105	6526	31718	1861	2996
		Median	275	500	500	500	500	400	350	1800	1400	270	613	495	833
		SD	529	839	672	736	526	814	223	69722	2802	47487	137815	5573	11600
	Non-AGP Households	Mean	562	738	1122	1152	962	702	610	30059	3142	1456	4029	1185	5742
		Median	400	560	800	800	800	417	625	2400	2000	288	320	500	853
		SD	540	678	1145	1265	714	1065	386	88316	3996	4077	18107	3585	23074

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: Yield is measured as output in kilograms per hectare of land (kg/ha). 'SD' stands for 'Standard Deviation'. It is clear that Chat output is measured with significant imprecision. It is reported here for the sake of completeness.

Annex Table B.4.4. Family labour use – Output per labour day in adult equivalent units, by region and AGP status

Region	Group	Statistic	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
Tigray	All-Sample	Mean	11.8	12.0	11.2	13.5	13.7	12.7	13.3	15.2	13.5	8.8	22.9	17.9	-
		Median	8.0	8.1	7.4	9.8	10.1	9.5	8.9	11.0	8.3	3.0	25.5	3.5	-
		SD	10.9	11.5	10.7	11.6	12.0	11.3	12.2	13.8	14.0	10.9	15.7	21.3	-
	AGP	Mean	15.1	14.1	13.1	15.8	14.1	13.0	13.1	17.3	16.9	12.5	22.9	47.6	-
		Median	12.2	10.8	10.3	11.6	10.3	10.1	8.9	15.2	10.5	12.5	25.5	47.6	-
		SD	11.5	11.9	11.0	12.7	12.3	11.6	12.1	13.8	15.6	0.0	15.7	0.0	-
	Non-AGP	Mean	9.5	10.2	9.9	10.8	12.2	12.3	13.9	11.1	7.9	8.0	-	2.7	-
		Median	5.7	6.0	5.9	7.8	9.6	8.4	9.0	6.3	4.8	0.5	-	3.0	-
		SD	9.7	10.9	10.3	9.6	10.9	10.8	12.6	12.8	8.4	11.8	-	0.8	-
Amhara	All-Sample	Mean	9.6	13.9	11.5	12.7	11.2	14.6	15.4	13.0	17.2	11.1	25.5	11.3	3.12
		Median	5.6	10.0	8.0	9.1	7.5	10.4	12.4	9.3	15.0	4.7	25.9	5.2	3.12
		SD	9.8	11.7	10.7	11.1	11.1	12.6	12.5	10.8	12.5	12.8	10.4	12.6	0
	AGP	Mean	11.8	17.5	17.3	13.0	12.6	18.8	15.2	12.3	17.1	12.7	9.0	12.9	3.1
		Median	8.2	14.5	14.9	9.0	8.4	15.5	11.7	8.0	13.3	6.1	13.3	7.7	3.1
		SD	10.4	12.8	12.5	11.6	11.7	14.3	12.5	10.8	12.3	14.0	6.4	12.8	0.0
	Non-AGP	Mean	8.4	12.3	9.5	12.3	10.8	13.7	15.6	13.8	17.3	9.0	29.3	9.4	-
		Median	4.9	8.7	6.7	9.1	7.3	9.6	12.5	11.4	15.4	3.3	25.9	3.7	-
		SD	9.2	10.8	9.2	10.4	10.9	12.0	12.5	10.7	12.6	10.7	6.8	12.1	-
Oromiya	All-Sample	Mean	10.3	15.6	13.1	10.0	8.0	14.2	10.4	16.4	14.6	14.6	15.9	10.3	16.2
		Median	7.0	12.6	10.5	5.9	4.5	10.0	6.5	11.4	11.5	9.9	13.3	6.6	11.7
		SD	10.1	12.6	11.3	10.2	9.0	12.5	11.4	14.2	11.9	14.7	13.3	10.5	14.2
	AGP	Mean	11.3	15.4	12.6	11.9	10.9	16.0	12.4	11.5	13.8	10.0	12.4	10.6	13.7
		Median	7.4	11.3	9.4	8.1	7.1	12.5	7.9	8.8	10.0	4.8	7.1	5.3	9.5
		SD	10.6	13.3	11.3	11.3	10.9	12.1	11.7	10.2	12.1	12.4	12.6	12.2	12.7
	Non-AGP	Mean	9.7	15.7	13.4	9.5	7.2	13.3	10.0	18.9	14.8	15.5	17.9	10.2	18.6
		Median	6.7	13.3	10.8	5.6	4.2	8.5	6.3	12.9	12.3	10.0	14.3	6.7	16.7
		SD	9.7	12.4	11.3	9.9	8.2	12.6	11.3	15.3	11.9	14.9	13.3	10.3	15.1
SNNP	All-Sample	Mean	9.7	9.3	11.6	9.2	11.3	11.0	9.9	11.1	9.3	13.1	12.1	10.1	9.8
		Median	5.6	5.6	8.3	4.8	7.7	6.3	6.5	7.3	6.0	8.3	7.7	5.4	5.9
		SD	10.4	9.6	10.6	10.3	10.9	12.0	12.1	11.4	9.8	12.9	11.4	11.3	10.5
	AGP	Mean	8.0	9.6	8.8	7.1	8.0	8.9	17.7	12.0	10.5	9.4	11.9	9.0	10.0
		Median	5.5	6.3	5.4	3.6	4.3	5.6	14.8	8.0	6.3	5.1	6.7	4.6	5.8
		SD	9.0	9.8	9.8	9.0	9.5	9.5	15.6	11.5	11.6	11.2	12.7	10.7	10.9
	Non-AGP	Mean	10.0	9.2	12.2	10.3	12.2	11.6	4.9	10.7	8.7	15.1	12.2	10.7	9.7
		Median	5.8	4.7	8.9	5.3	9.1	6.4	1.7	6.5	5.7	11.7	8.5	5.7	5.9
		SD	10.6	9.6	10.6	10.8	11.1	12.5	4.6	11.3	8.9	13.3	10.9	11.6	10.3

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'SD' stands for 'Standard Deviation'.

Annex Table B.4.5. Livestock ownership, by type, region, and AGP status

Region	Category	Statistic	Cattle*	Sheep & goats	Pack Animals	Chicken	Camels
			No.	No.	No.	No.	No.
Tigray	All HHs	Mean	4.0	5.7	1.2	5.7	0.2
		SD	4.6	7.5	1.9	6.1	0.7
	AGP HHs	Mean	4.4	6.4	1.3	5.6	0.5
		SD	4.7	8.6	1.3	6.0	1.1
	Non-AGP HHs	Mean	3.3	4.8	1.0	5.9	0.1
		SD	4.2	5.6	2.4	6.2	0.4
Amhara	All HHs	Mean	2.8	3.5	1.1	4.0	0.0
		SD	2.6	4.5	1.3	4.9	0.2
	AGP HHs	Mean	3.9	2.3	1.1	5.0	0.0
		SD	3.5	3.3	1.3	6.2	0.4
	Non-AGP HHs	Mean	2.2	4.1	1.1	3.6	0.0
		SD	1.7	4.9	1.2	4.0	0.1
Oromiya	All HHs	Mean	4.4	4.7	2.0	5.5	-
		SD	4.4	5.4	1.6	5.0	-
	AGP HHs	Mean	4.5	4.2	1.9	4.7	-
		SD	4.6	4.6	1.7	5.0	-
	Non-AGP HHs	Mean	4.4	4.9	2.1	5.7	-
		SD	4.3	5.7	1.6	5.0	-
SNNP	All HHs	Mean	2.8	3.2	1.3	3.2	-
		SD	2.9	3.2	0.9	3.6	-
	AGP HHs	Mean	2.9	3.3	1.4	4.0	-
		SD	3.1	2.9	1.0	4.3	-
	Non-AGP HHs	Mean	2.8	3.2	1.3	2.9	-
		SD	2.8	3.3	0.8	3.3	-

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: * 'Cattle' excludes calves. 'SD' and 'No.' stand respectively for 'Standard Deviation' and 'Number'.

Annex Table B.4.6. Milk yield in liters per cow per day, by AGP status and household heads' characteristics

Region	Category	Milk Yield (liters/cow/day)		No. of cows for HHs with milk production	
		Mean	SD	Mean	SD
Tigray	All Households	0.94	0.83	2.00	1.76
	AGP Households	1.02	0.87	2.26	1.71
	Non-AGP Households	0.79	0.72	1.46	1.76
Amhara	All Households	0.97	0.75	1.21	1.00
	AGP Households	0.75	0.45	1.61	1.25
	Non-AGP Households	1.10	0.86	0.97	0.73
Oromiya	All Households	0.90	0.64	2.07	1.51
	AGP Households	0.94	0.76	2.04	1.51
	Non-AGP Households	0.89	0.59	2.08	1.51
SNNP	All Households	1.03	0.75	1.79	1.17
	AGP Households	1.20	1.07	1.75	1.16
	Non-AGP Households	0.98	0.62	1.80	1.17

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'SD' stands for 'Standard Deviation'.

Annex Table B.5.1. Proportion of chemical fertilizer users (%), by crop and household categories

Region	Statistic	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
National	**All HHHs**	63.0	52.1	74.1	41.5	5.2	21	6.2	12.0	30.5	0.4	2.3	1.6	2.7
	Female HHHs	56.3	50.9	68.2	36.0	3.2	18.9	5.2	10.3	30.4	0.2	1.7	0.6	2.6
	Male HHHs	65.1	52.6	76.1	43.7	6.0	21.8	6.4	12.8	30.5	0.5	2.4	2	2.7
	Mature HHHs	62.7	52.0	74.4	41.3	5.0	20	6.8	12.1	28.9	0.6	2.7	1.7	2.4
	Youth HHHs	63.7	52.3	73.7	41.9	5.6	22.9	5.1	12	33.2	0	1.5	1.4	3.2
AGP woredas	**All HHHs**	65.7	59.0	80.6	40.4	7.8	21.8	5.5	15.1	24.7	0.5	5.5	0.9	0.8
	Female HHHs	59.1	61.1	75.3	33.1	3.8	18.4	4.9	13.1	22.8	0.9	6.0	0.6	1.0
	Male HHHs	67.8	58.3	82.4	43.2	9.1	22.9	5.7	15.8	25.3	0.4	5.4	1.0	0.7
	Mature HHHs	64.1	59.7	79.7	39.2	8.4	21.4	5.9	16.2	23.1	0.8	5.8	1.0	0.9
	Youth HHHs	68.6	57.7	82.2	42.6	6.8	22.5	4.8	13.4	27.3	0.0	5.1	0.6	0.7
Non-AGP woredas	**All HHHs**	61.9	50.4	72.1	41.8	4.3	20.8	6.4	10.4	32.0	0.4	1.0	1.7	3.3
	Female HHHs	55.2	48.4	65.9	37.0	3.0	19.0	5.3	9.0	32.1	0.0	0.0	0.6	3.1
	Male HHHs	64.0	51.1	74.2	43.8	4.8	21.5	6.7	11.0	32.0	0.5	1.3	2.2	3.4
	Mature HHHs	62.1	50.0	72.6	42.0	3.9	19.7	7.1	10.0	30.4	0.6	1.5	1.8	2.9
	Youth HHHs	61.7	51.1	71.2	41.6	5.1	23.0	5.2	11.1	35.0	0.0	0.0	1.6	4.0
Tigray	**All HHHs**	50.5	65.8	75.9	20.1	25.6	24.4	12.6	24.0	40.9	0.0	0.0	0.0	0.0
	AGP HHs	28.7	61.4	72.7	12.1	20.4	27.7	9.7	16.7	35.6	0.0	0.0	0.0	0.0
	Non-AGP HHs	69.3	69.8	78.5	31.3	42.9	20.2	24.6	42.6	49.1	0.0	0.0	0.0	0.0
Amhara	**All HHHs**	63.5	35.5	63.2	63.1	2.8	11.2	3.8	37.6	32.0	0.0	5.8	0.8	0.0
	AGP HHs	63.8	57.8	73.9	59.2	4.8	23.4	5.4	43.8	41.2	0.0	12.6	1.5	0.0
	Non-AGP HHs	63.4	31.8	61.8	65.0	2.2	9.2	3.0	32.7	29.7	0.0	0.0	0.0	0.0
Oromiya	**All HHHs**	67.9	67.6	81.8	33.6	2.3	26.8	5.7	4.3	28.1	0.3	0.2	1.4	1.0
	AGP HHs	73.3	63.1	84.2	28.6	3.9	18.8	3.7	7.1	29.0	1.5	0.7	0.8	0.5
	Non-AGP HHs	64.9	68.8	80.6	34.9	1.8	29.5	6.2	2.8	27.8	0.0	0.0	1.5	1.4
SNNP	**All HHs**	50.5	35.7	71.3	31.4	10.7	25.2	25.5	4.6	33.0	0.7	3.5	1.8	3.1
	AGP HHs	41.3	49.2	71.4	33.3	5.3	28.0	3.6	1.4	8.0	0.0	9.2	0.8	0.9
	Non-AGP HHs	52.0	31.6	71.3	30.8	11.9	24.7	32.5	6.1	41.9	0.9	1.6	2.1	3.7

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

*N*otes: 'HHHs' and 'HHs' stand respectively for 'Household Heads' and 'Households'

Annex Table B.5.2. Proportion of chemical fertilizer users and average application rate of fertilizer for all farmers and users only (in kg), by household categories and AGP status

Region	Household type	Chemical fertilizer users (%)	DAP - All farmers	DAP - User farmers only	Urea - All farmers	Urea - User farmers only	DAP+Urea - All farmers	DAP+Urea - User farmers only
Tigray	All Households	56.8	12.1	22.5	8.4	19.5	20.4	36.4
	AGP Households	78.0	8.5	21.0	6.7	19.4	15.3	34.9
	Non-AGP Households	44.0	17.8	23.7	11.0	19.5	28.9	37.8
Amhara	All Households	58.9	14.1	30.2	13.0	26.5	27.1	50.6
	AGP Households	56.8	19.5	41.1	18.6	33.0	38.1	62.1
	Non-AGP Households	65.8	11.2	24.2	10.0	22.1	21.1	42.8
Oromiya	All Households	66.4	24.8	40.6	11.6	35.0	36.4	56.7
	AGP Households	64.1	24.2	39.8	15.1	34.7	39.3	57.1
	Non-AGP Households	73.6	25.0	40.8	10.4	35.1	35.4	56.5
SNNP	All Households	40.7	7.8	20.5	3.5	17.7	11.2	28.5
	AGP Households	64.1	6.3	23.2	2.4	18.6	8.7	30.8
	Non-AGP Households	73.6	8.3	19.8	3.8	17.6	12.1	28.0

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Annex Table B.5.3. Improved seed, irrigation, and soil conservation use by region and AGP status (% of households)

Region	Household type	Improved seed users (%)	Improved seed use – All Farmers (kg/ha)	Improved seed use – User Farmers Only (kg/ha)	Irrigation (%)	Soil conservation (%)
Tigray	All HHs	18.4	1.73	17.7	8.60	84.6
	AGP HHs	12.0	1.15	18.2	7.50	80.1
	Non-AGP HHs	29.0	2.69	17.0	10.40	92.3
Amhara	All HHs	33.8	3.67	11.8	7.30	88.2
	AGP HHs	45.9	1.44	12.4	12.30	81.3
	Non-AGP HHs	30.1	3.44	10.6	5.80	90.3
Oromiya	All HHs	21.5	1.68	9.9	3.40	76.1
	AGP HHs	13.2	1.04	9.9	8.10	80.1
	Non-AGP HHs	24.2	1.89	10.3	1.90	74.8
SNNP	All HHs	13.1	1.21	11.4	1.80	47.5
	AGP HHs	15.3	1.10	11.9	1.23	32.2
	Non-AGP HHs	12.6	1.24	9.3	1.95	51.0

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHs' stands for 'Households'.

Annex Table B.5.4. Improved seed use by AGP status, household head characteristics and crop type (% of households)

Group	Category	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
National	All Households	5.9	3.6	11.2	32.1	2.8	2.1	1.5	2.1	2.5	-	0.2	0.1	-
	Male HHHS	5.7	4.0	12.1	34.5	3.5	1.9	1.6	2.8	2.1	-	0.3	0.2	-
	Female HHHS	6.3	2.4	8.5	26.1	0.9	2.6	1.3	0.4	3.6	-	0.0	0.0	-
	Mature HHHS	5.3	3.6	11.2	32.0	1.6	2.3	1.5	1.6	3.4	-	0.2	0.2	-
	Youth HHHS	6.9	3.5	11.1	32.1	5.0	1.7	1.6	3.0	0.9	-	0.3	0.1	-
AGP woredas	All Households	6.6	6.8	10.0	31.6	3.1	2.4	4.8	0.8	2.1	-	0.8	0.3	-
	Male HHHS	6.2	8.2	9.1	33.6	3.0	2.6	4.7	0.7	1.8	-	1.0	0.4	-
	Female HHHS	7.8	2.9	12.5	26.4	3.3	1.8	5.0	1.2	3.1	-	0.0	0.0	-
	Mature HHHS	6.4	5.7	9.4	30.3	2.7	2.3	4.6	0.9	2.1	-	0.6	0.1	-
	Youth HHHS	6.9	8.8	11.1	34.3	3.7	2.6	5.1	0.6	2.2	-	1.1	0.6	-
Non-AGP woredas	All Households	5.6	2.8	11.6	32.2	2.7	2.0	0.3	2.8	2.6	-	0.0	0.1	-
	Male HHHS	5.5	3.0	13.0	34.8	3.7	1.7	0.4	4.0	2.2	-	0.0	0.2	-
	Female HHHS	5.6	2.3	7.2	26.0	0.1	2.8	0.0	0.0	3.7	-	0.0	0.0	-
	Mature HHHS	4.8	3.1	11.9	32.6	1.2	2.3	0.3	1.9	3.8	-	0.0	0.2	-
	Youth HHHS	6.9	2.3	11.1	31.4	5.5	1.5	0.4	4.6	0.5	-	0.0	0.0	-

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHs' stands for 'Households'

Annex Table B.5.5. Improved seed use, by region, AGP status, and crop type (% of households)

Region	Category	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
Tigray	All HHs	8.29	5.19	33.21	3.26	7.25	6.58	7.25	2.73	10.52	-	-	-	-
	AGP HHs	9.83	5.31	22.32	2.17	4.48	8.56	4.33	1.76	13.79	-	-	-	-
	Non-AGP HHs	7.00	5.08	41.99	4.79	16.45	4.09	19.22	5.58	5.43	-	-	-	-
Amhara	All HHs	5.32	3.11	6.16	54.06	1.85	2.34	2.71	0.37	1.44	-	11.56	-	-
	AGP HHs	11.35	17.11	14.10	54.27	6.16	4.33	7.58	0.91	0.56	-	25.21	-	-
	Non-AGP HHs	3.23	0.78	5.08	53.95	0.56	2.03	0.00	0.00	1.67	-	0.00	-	-
Oromiya	All HHs	3.69	3.80	11.01	24.21	2.47	1.88	0.38	4.39	3.58	-	-	0.04	-
	AGP HHs	3.12	3.55	6.59	16.54	0.74	1.18	2.17	1.66	3.10	-	-	0.38	-
	Non-AGP HHs	4.00	3.86	13.22	26.16	2.99	2.11	0.00	5.80	3.69	-	-	0.00	-
SNNP	All HHs	12.83	3.65	17.93	21.94	3.70	1.84	1.50	1.27	1.32	-	-	0.26	-
	AGP HHs	7.89	4.26	19.47	24.61	2.45	2.27	5.81	0.00	1.18	-	-	0.24	-
	Non-AGP HHs	13.63	3.46	17.60	21.14	3.99	1.77	0.00	1.87	1.37	-	-	0.27	-

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHs' stands for 'Households'.

Annex Table B.5.6. Mean difference test – Proportion of households using improved seed, by crop type and household categories

Region	Category	Statistic	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root Crops	Fruit Crops	Chat	Coffee	Enset
National	Male HHHs vs. Female HHHs	MD	-0.5	1.6	3.5	8.4	2.6	-0.7	0.3	2.4	-1.5	-	0.3	0.2	-
		Sig.				***	**			*					
	Mature HHHs vs. Youth HHHs	MD	-1.6	0.1	0.1	-0.1	-3.4	0.6	-0.1	-1.4	2.5	-	-0.1	0.1	-
		Sig.					*								
	AGP HHs vs. Non-AGP HHs	MD	1.0	4.0	-1.6	-0.6	0.4	0.4	4.4	-2.0	-0.5	-	0.8	0.1	-
		Sig.							*						
AGP woredas	Male HHHs vs. Female HHHs	MD	-1.6	5.2	-3.3	7.2	-0.3	0.7	-0.4	-0.5	-1.2	-	1.0	0.4	-
		Sig.		**		***								*	
	Mature HHHs vs. Youth HHHs	MD	-0.5	-3.1	-1.8	-4.0	-1.0	-0.3	-0.5	0.3	-0.1	-	-0.5	-0.5	-
		Sig.		*		**									

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Note: 'HHHs' and 'HHs' stand respectively for 'Headed Households' and 'Households'. 'MD' and 'Sig.' stand for 'Mean Difference' and 'Significance', respectively. 'Mean difference' refers to the difference between the mean values of the variable in question wit in the groups being compared. 'Significance' reports the result of a corresponding (two-tailed) test of whether such difference is statistically different from zero. ***, ** and * indicate that the corresponding mean difference is statistically significant at 1 percent, 5 percent and 10 percent, respectively.

Annex Table B.5.7. Percentage of households that purchased improved seed with credit and reasons for not using credit, by AGP status and household categories

Region	Category	Purchased input with credit	Reason for not purchasing with credit							
			No need for credit	Asked for credit but was refused	Credit provider not available	Fear of being rejected	Lack of assets for collateral	Fear of losing asset held as collateral	Fear of not being able to pay back	Interest rate too high
National	All HHs	7.3	29.8	11.1	51.5	1.0	0.6	0.3	2.9	2.7
	Male HHHs	7.3	31.1	10.2	52.0	0.8	0.4	0.4	2.5	2.7
	Female HHHs	7.1	25.4	14.2	50.0	2.0	1.4	0.0	4.3	2.7
	Mature HHHs	7.8	27.4	12.4	52.5	0.9	0.8	0.5	2.4	3.2
	Youth HHHs	6.4	34.1	8.8	49.9	1.3	0.4	0.0	3.8	1.9
AGP woredas	All HHs	8.6	35.3	11.9	45.8	0.9	0.4	0.1	1.7	3.2
	Male HHHs	9.1	36.0	12.1	45.0	1.0	0.4	0.1	1.3	3.2
	Female HHHs	6.7	32.9	10.9	48.5	0.8	0.5	0.0	3.1	3.2
	Mature HHHs	9.5	32.9	12.4	46.4	1.4	0.7	0.1	1.8	3.8
	Youth HHHs	7.0	39.6	10.8	44.8	0.2	0.0	0.0	1.6	2.2
Non-AGP woredas	All HHs	6.9	28.3	10.9	52.7	1.1	0.7	0.4	3.2	2.6
	Male HHHs	6.8	29.8	9.7	53.7	0.7	0.4	0.5	2.8	2.6
	Female HHHs	7.1	23.2	15.0	49.3	2.3	1.6	0.0	4.6	2.5
	Mature HHHs	7.2	26.0	12.4	53.6	0.8	0.8	0.6	2.5	3.0
	Youth HHHs	6.2	32.5	8.2	51.1	1.6	0.4	0.0	4.4	1.8

Source: Authors' calculations using data from the AGP Baseline Survey 2011.
Notes: 'HHHs' and 'HHs' stand respectively for 'Headed Households' and 'Households'

Annex Table B.6.1. Crop use (%), by region, crop, and AGP status (100%=total crop production)

Region	Category	Variable	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
Tigray	All HHS	Consumption	72.9	71.6	73.2	81.3	76.2	71.1	11.5	68.0	29.1	26.2	5.7	72.2	-
		Seed	12.7	17.2	15.0	10.6	8.5	14.4	7.6	0.6	6.7	-	-	-	-
		Sale	12.7	7.2	7.1	5.7	12.9	12.6	79.8	30.4	59.8	72.6	93.2	27.8	-
	AGP HHs	Consumption	66.4	67.1	69.1	80.5	74.8	68.8	8.7	79.8	23.0	10.3	6.3	56.0	-
		Seed	12.4	17.2	15.9	10.5	8.5	14.0	7.4	0.4	8.2	-	-	-	-
		Sale	18.8	10.6	10.1	5.8	14.2	14.8	82.6	18.5	66.2	87.8	92.5	44.0	-
	Non-AGP HHs	Consumption	79.2	76.0	76.4	83.0	81.1	74.1	25.8	45.3	40.8	60.3	-	91.2	-
		Seed	13.1	17.1	14.3	10.8	8.8	14.9	8.8	1.0	4.0	-	-	-	-
		Sale	6.7	3.8	4.8	5.6	8.4	9.8	65.4	53.5	47.6	39.7	100.0	8.8	-
Amhara	All HHS	Consumption	61.9	70.7	68.7	77.8	77.0	54.3	23.4	59.3	65.2	22.5	32.0	73.9	-
		Seed	11.5	17.2	16.0	4.1	6.4	14.9	11.6	3.7	10.9	-	-	0.3	-
		Sale	19.3	7.6	10.0	13.6	10.6	23.9	58.5	34.9	22.3	73.3	68.0	25.2	-
	AGP HHs	Consumption	62.5	64.5	58.8	72.3	75.2	52.0	10.5	47.2	70.2	26.5	11.1	65.9	-
		Seed	11.8	15.0	16.5	3.4	7.3	11.9	9.5	1.5	7.3	-	-	0.5	-
		Sale	6.7	3.8	4.8	5.6	8.4	9.8	65.4	53.5	47.6	39.7	100.0	8.8	-
	Non-AGP HHs	Consumption	61.6	73.3	72.7	85.0	77.4	55.0	33.2	75.4	61.9	12.4	52.4	87.2	-
		Seed	11.3	18.2	15.8	4.9	6.2	15.8	13.2	6.5	13.2	-	-	-	-
		Sale	19.6	16.3	18.9	18.9	12.5	30.6	76.9	49.8	21.6	67.7	88.9	32.6	-
Oromiya	All HHS	Consumption	61.2	63.6	55.3	78.5	77.8	54.8	16.9	64.3	59.6	71.2	23.4	70.0	90.5
		Seed	15.6	20.9	21.2	6.3	5.9	19.8	9.9	2.6	11.8	-	0.4	0.3	0.7
		Sale	21.2	9.8	21.2	11.8	10.7	22.5	71.8	27.8	27.2	24.5	74.1	28.1	5.5
	AGP HHs	Consumption	61.5	66.2	56.5	80.6	77.1	52.4	14.6	73.3	56.3	52.9	32.5	62.2	86.9
		Seed	15.4	18.6	21.4	7.9	6.8	23.1	11.7	0.2	10.4	-	1.2	0.5	1.1
		Sale	19.1	3.9	6.4	6.4	10.2	22.0	44.5	15.3	22.7	87.6	47.6	12.8	-
	Non-AGP HHs	Consumption	61.0	62.9	54.7	77.9	78.0	55.6	17.3	60.3	60.4	73.8	19.0	71.2	96.6
		Seed	15.8	21.5	21.2	6.0	5.6	18.7	9.6	3.7	12.1	-	-	0.3	-
		Sale	21.3	9.0	21.6	12.5	9.9	22.2	71.8	28.9	25.9	21.7	79.7	26.8	-
SNNP	All HHS	Consumption	36.4	64.5	61.1	79.1	85.7	65.8	54.3	81.3	74.3	46.4	13.3	57.9	91.5
		Seed	10.7	13.2	12.6	5.1	5.4	8.8	5.2	0.4	8.5	1.4	0.2	0.3	0.2
		Sale	51.1	20.4	23.9	13.5	6.2	23.5	38.1	17.0	15.3	50.3	85.7	40.5	6.3
	AGP HHs	Consumption	48.5	62.0	66.4	75.8	67.8	61.9	26.5	77.2	75.4	61.8	10.4	39.5	90.5
		Seed	10.4	15.0	11.1	3.9	5.2	9.3	8.3	0.5	7.2	0.3	0.8	0.4	0.2
		Sale	36.7	18.8	17.7	18.7	21.3	25.7	61.2	20.9	16.1	36.7	87.6	58.4	8.2
	Non-AGP HHs	Consumption	34.4	65.4	59.9	80.7	89.5	66.7	100.0	83.0	73.8	39.8	14.3	66.6	91.9
		Seed	10.7	12.6	12.9	5.6	5.4	8.7	-	0.3	9.1	1.8	-	0.3	0.3
		Sale	53.4	21.0	25.3	11.0	3.0	22.9	-	15.5	14.9	56.1	85.0	32.1	5.5

Source: Authors' calculation based on AGP baseline survey, 2011

Annex Table B.6.2. Average revenue (ETB) from crop sale, by region, AGP status, and crop type

Region	Categories	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
Tigray	All HHs	512	167	195	91	550	259	6819	475	3836	68	436	236	0
	AGP HHs	527	202	266	109	642	351	7508	272	5277	111	484	409	0
	Non-AGP HHs	497	133	142	57	245	138	3189	870	1059	0	7	33	0
Amhara	All HHs	564	221	361	603	344	699	5478	1359	421	254	320	2196	0
	AGP HHs	632	536	885	977	527	1037	12192	2225	463	337	463	2898	0
	Non-AGP HHs	524	85	147	103	304	601	358	215	393	40	181	1025	0
Oromiya	All HHs	792	500	1603	602	326	722	1228	258	1082	282	1183	7549	58
	AGP HHs	1120	736	1440	372	584	1121	1958	171	1337	585	2423	6532	93
	Non-AGP HHs	597	433	1683	659	254	584	1090	297	1019	238	589	7707	0
SNNP	All HHs	742	337	604	256	100	623	188	43	136	124	2547	5420	67
	AGP HHs	532	413	480	388	422	562	302	54	100	85	8521	7765	82
	Non-AGP HHs	776	309	632	193	32	637	0	39	154	141	440	4318	61

Source: Authors' calculation based on AGP baseline survey, 2011.
Note: 'HHs' stands for 'Households'.

Annex Table B.6.3. Percentage of households who sold their output, by crop type, household categories, and AGP status

Group	Categories	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
National	All HHs	20.0	9.3	14.6	16.4	6.4	19.0	8.4	3.4	8.1	3.7	5.2	10.4	3.7
	Female HHHs	15.8	9.1	12.2	13.7	5.6	15.7	6.9	3.5	7.0	3.0	4.2	9.2	4.0
	Male HHHs	21.7	9.3	15.6	17.6	6.7	20.3	9.0	3.4	8.6	4.0	5.7	11.0	3.5
	Mature HHHs	20.8	9.0	13.8	16.1	6.4	19.3	8.1	3.5	8.4	3.8	5.4	10.7	3.8
	Youth HHHs	18.6	9.8	15.9	17.0	6.4	18.4	8.8	3.3	7.7	3.5	5.0	9.9	3.3
AGP woredas	All HHs	24.6	9.1	16.4	18.0	8.7	17.1	9.6	6.0	7.4	4.0	6.5	9.5	5.3
	Female HHHs	17.6	8.5	14.6	17.7	5.3	14.1	5.5	4.8	6.1	3.3	4.8	12.6	5.4
	Male HHHs	25.3	11.9	18.7	24.4	7.9	19.7	9.9	5.5	9.3	3.6	5.6	12.0	4.9
	Mature HHHs	23.1	9.9	16.9	22.6	7.5	17.9	8.5	5.0	8.2	3.6	5.3	13.1	5.0
	Youth HHHs	23.0	12.6	18.5	22.3	6.5	18.3	8.8	5.7	8.7	3.4	5.3	10.6	5.2
Non-AGP woredas	All HHs	18.6	9.3	14.0	16.0	5.7	19.5	8.0	2.6	8.3	3.6	4.8	10.7	3.2
	Female HHHs	15.1	9.3	11.2	12.2	5.8	16.4	7.4	3.0	7.3	2.9	4.0	7.8	3.4
	Male HHHs	20.3	8.3	14.3	14.8	6.3	20.6	8.6	2.5	8.3	4.1	5.7	10.6	3.0
	Mature HHHs	19.9	8.6	12.5	13.5	6.0	19.9	7.9	2.8	8.4	3.9	5.4	9.8	3.4
	Youth HHHs	16.8	8.6	14.9	14.9	6.3	18.4	8.8	2.3	7.2	3.5	4.9	9.7	2.6

Source: Authors' calculation based on AGP baseline survey, 2011.
Note: 'HHs' and 'HHHs' stand respectively for 'Households' and 'Headed Households'.

Annex Table B.6.4. Percentage of households who sold their output, by crop type, region, and AGP status

Region	Categories	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
Tigray	All HHs	10.9	7.9	8.7	3.7	17.5	5.2	17.4	1.1	3.6	0.1	1.3	0.4	-
	AGP HHs	11.3	8.1	8.0	3.6	23.7	5.8	24.3	0.7	4.2	0.2	2.0	0.6	-
	Non-AGP HHs	10.2	7.6	9.8	3.9	7.7	4.1	6.3	1.7	2.7	0.0	0.2	0.2	-
Amhara	All HHs	27.2	9.2	12.2	20.7	9.0	27.3	8.2	3.0	7.9	1.0	0.3	1.3	-
	AGP HHs	29.3	14.3	18.3	43.8	5.3	19.4	12.5	6.4	8.4	1.9	0.4	3.0	-
	Non-AGP HHs	26.1	6.5	8.8	8.3	10.9	31.6	5.8	1.2	7.6	0.5	0.2	0.4	-
Oromiya	All HHs	18.4	10.2	19.3	18.2	7.1	17.4	12.7	2.2	9.0	2.9	4.4	8.0	0.9
	AGP HHs	28.9	10.1	25.6	11.6	8.7	23.2	7.9	2.9	8.4	2.2	5.3	5.9	3.7
	Non-AGP HHs	15.0	10.2	17.2	20.3	6.6	15.5	14.2	2.0	9.2	3.1	4.1	8.7	0.0
SNNP	All HHs	16.3	7.8	9.4	10.3	1.4	14.6	0.1	6.2	7.2	8.2	12.3	25.2	12.6
	AGP HHs	7.7	8.0	5.2	15.2	3.1	10.8	0.5	8.8	9.5	8.8	13.0	38.4	15.6
	Non-AGP HHs	19.3	7.8	10.9	8.6	0.8	15.9	0.0	5.3	6.4	8.0	12.0	20.6	11.6

Source: Authors' calculation based on AGP baseline survey, 2011.
Note: 'HHs' stands for 'Households'.

Annex Table B.6.5. Percentage of transportation cost from total revenue, by region, AGP status and crop type

Region	Category	Teff	Barley	Wheat	Maize	Sorghum	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
Tigray	All HHs	0.5	1.8	0.6	1.2	1.2	0.4	1.2	6.6	5.2	0.6	0.8	-	
	AGP HHs	0.7	2.3	0.4	1.3	1.2	0.4	1.3	1.2	1.0	-	0.8	-	
	Non-AGP HHs	0.2	0.2	0.9	0.9	0.3	0.1	0.2	15.6	14.7	4.8	-	-	
Amhara	All HHs	0.3	0.2	0.3	0.8	1.1	0.1	1.5	0.4	0.8	0.5	0.8	0.0	
	AGP HHs	0.5	0.3	0.3	0.8	3.5	0.2	1.5	0.4	1.1	0.6	1.1	-	
	Non-AGP HHs	0.2	-	0.3	0.2	0.2	0.1	0.2	0.5	0.4	-	-	0.1	
Oromiya	All HHs	1.3	0.6	1.2	2.1	0.8	0.6	0.4	13.5	3.7	0.0	0.2	3.2	1.9
	AGP HHs	0.3	1.0	0.4	1.6	0.4	0.4	0.3	0.8	13.0	0.2	0.1	0.3	1.9
	Non-AGP HHs	2.0	0.4	1.7	2.1	1.0	0.7	0.4	15.0	1.1	-	0.6	3.9	
SNNP	All HHs	2.0	11.2	0.7	2.4	1.7	2.1	0.8	4.8	1.5	0.7	4.8	1.5	2.3
	AGP HHs	0.9	2.2	1.0	1.8	2.0	1.6	1.2	3.1	2.6	0.6	3.5	0.6	1.5
	Non-AGP HHs	2.2	15.8	0.7	2.9	0.9	2.2	0.5	5.1	1.2	0.7	5.9	2.1	2.5

Source: Authors' calculation based on AGP baseline survey, 2011.
Note: 'HHs' stands for 'Households'.

Annex Table B.6.6. Major buyers and major reasons for the choice of buyers, by region and crop type.

Region	Variable	Cereals	Pulses	Oil seeds	Vegetables	Root crops	Fruit crops	Chat	Coffee	Enset
Tigray	Major buyer	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I
	Reasons to choose buyer	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay	Advance pay	immediate pay	immediate pay	
Amhara	Major buyer	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type II	Buyer Type I	Buyer Type I	Buyer Type I
	Reasons to choose buyer	immediate pay	immediate pay	higher price	immediate pay	immediate pay	immediate pay	immediate pay	higher price	
Oromiya	Major buyer	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type II	Buyer Type I	Buyer Type I	Buyer Type I
	Reasons to choose buyer	immediate pay	immediate pay	higher price	higher price	immediate pay	immediate pay	immediate pay	immediate pay	higher price
SNNP	Major buyer	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I	Buyer Type I
	Reasons to choose buyer	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay	immediate pay

Source: Authors' calculation based on AGP baseline survey, 2011.

Note: 'Buyer Type I' and 'Buyer Type II' respectively stand for 'Private trader in the village or local market' and 'Consumer buying in the village or local market'.

Annex B.6.7. Proportion of households that used mobile phone in crop transaction and those that agreed price over mobile phone, if used, by region and crop type

Region	Variable	Cereals	Pulses	Oil seeds	Vege tables	Root crops	Fruit crops	Chat	Coffee	Enset
Tigray	Mobile use in crop sale (%)	0.5	0.0	3.0	5.9	6.9	0.0	6.0	0.0	
	Agreed price over mobile (%)	15.5		92.2	28.6	43.9		0.0		
Amhara	Mobile use in crop sale (%)	1.2	1.6	0.5	1.9	0.2	0.9	0.0	0.0	
	Agreed price over mobile (%)	80.2	68.6	100.0	100.0	47.6	0.0			
Oromiya	Mobile use in crop sale (%)	3.8	3.6	5.3	10.7	4.1	0.0	0.3	2.2	4.3
	Agreed price over mobile (%)	94.0	98.0	100	100	63.8		100	100	100
SNNP	Mobile use in crop sale (%)	0.6	0.5	0.0	0.0	1.3	0.0	16.8	0.4	2.3
	Agreed price over mobile (%)	91.9	17.9			19.3		87.7	100	100

Source: Authors' calculation based on AGP baseline survey, 2011.

Annex Table B.6.8. Average and proportion of revenue collected from the sale of livestock types, by region

Region	Variables	Cattle	Sheep & goats	Pack animals	Chickens	Camels	Total
Tigray	Average revenue (ETB)	687.8	205.1	23.1	30.6	53.3	1001
	Proportion (%)	68.7	20.5	2.3	3.1	5.3	100
Amhara	Average revenue (ETB)	741.6	221.8	64.2	24.9	0.9	1053
	Proportion (%)	70.4	21.1	6.1	2.4	0.1	100
Oromiya	Average revenue (ETB)	1356.4	195.4	83.9	122.5	0.0	1758
	Proportion (%)	77.1	11.1	4.8	7.0	0.0	100
SNNP	Average revenue (ETB)	834.3	88.7	32.0	6.8	0.0	963
	Proportion (%)	86.6	9.2	3.3	0.7	0.0	100

Source: Authors' calculation based on AGP baseline survey, 2011.

Annex Table B.6.9. Proportion of revenue paid for transportation, by region.

Region	Cattle	Sheep & goats	Pack animals	Chickens
Tigray	0.0	0.0	0.0	0.0
Amhara	0.0	0.2	-	0.1
Oromiya	0.4	0.3	0.0	0.7
SNNP	0.3	0.4	0.5	0.3

Source: Authors' calculation based on AGP baseline survey, 2011.

Annex Table B.6.10. Proportion of households that used mobile phone and that agreed price using mobile, if used, by region

Region	Variable	Cattle	Sheep & goats	Pack animals	Chickens
Tigray	Mobile use in sale (%)	1.0	0.0	0.0	0.2
	Agreed price over mobile (%)	0.0			100.0
Amhara	Mobile use in sale (%)	0.2	0.0	0.5	0.0
	Agreed price over mobile (%)	75.9		0.0	
Oromiya	Mobile use in sale (%)	2.6	0.2	7.7	0.1
	Agreed price over mobile (%)	57.5	42.7	51.4	51.4
SNNP	Mobile use in sale (%)	0.2	0.2	0.0	0.0
	Agreed price over mobile (%)	36.7	46.9		

Source: Authors' calculation based on AGP baseline survey, 2011.

Annex Table B.6.11. Average and proportion of revenue collected from the sale of livestock products, by region

Region	Variable	Meat	Hides and skins	Butter or yoghurt	Milk or cream	Dung	Eggs	Total
Tigray	Average Revenue (ETB)	8.6	4.0	41.9	8.1	1.9	34.2	98.7
	Proportion (%)	8.7	4.1	42.4	8.2	1.9	34.6	100
Amhara	Average Revenue (ETB)	2.7	9.0	19.5	6.3	0.4	39.5	77.3
	Proportion (%)	3.4	11.7	25.2	8.1	0.5	51.1	100
Oromiya	Average Revenue (ETB)	16.3	7.3	149.2	7.2	2.6	71.9	254.5
	Proportion (%)	6.4	2.9	58.6	2.8	1.0	28.2	100
SNNP	Average Revenue (ETB)	3.7	2.1	51.4	6.4	0.2	8.5	72.3
	Proportion (%)	5.1	2.9	71.1	8.9	0.2	11.7	100

Source: Authors' calculation based on AGP baseline survey, 2011.

Annex Table B.6.12. Average travel time to the market place and proportion of revenue paid for transportation, by household category and AGP status.

Region	Variable	Fresh milk	Cheese	Butter	Yoghurt
Tigray	Proportion paid for transportation (%)	0.0		0.8	
	Average travel time to market (minutes)	16.9	0.0	51.0	0.0
Amhara	Proportion paid for transportation (%)	0.0		0.0	
	Average travel time to market (minutes)	25.5	0.0	62.9	0.0
Oromiya	Proportion paid for transportation (%)	8.4	4.5	1.0	0.0
	Average travel time to market (minutes)	55.1	64.2	73.8	40.0
SNNP	Proportion paid for transportation (%)	0.2	1.1	0.5	0.0
	Average travel time to market (minutes)	50.3	43.6	50.8	48.6

Source: Authors' calculation based on AGP baseline survey, 2011.

Annex C: Description of Survey Areas based on Community Questionnaire Data

The AGP baseline survey was planned to cover 93 woredas and 305 enumeration areas (EAs) (see Annex Table A.1.1 above). Two-thirds (62) of the woredas were sampled from among those included in the AGP program and the remaining 31 from among non-AGP and non-PSNP woredas. However, the actual data collection comprised 61 AGP woredas and 32 non-AGP/non-PSNP woredas. Consequently, 200 of the EAs were in AGP woredas while 104 were in non-AGP woredas. Although households in all 305 EAs were surveyed, the Kebele-level (or community) survey was conducted in 304 EAs.

In the AGP baseline survey a community is defined as the kebele or peasant association (PA). Enumerators collected community level data by interviewing at least five people who are knowledgeable about the community, such as community leaders, PA chairmen, elders, priests, and teachers. At least one of the five respondents was required to be female and a representative of the youth was also included in the group of five people. In this section we describe the surveyed communities using unweighted statistics from data collected. The section is organized into 6 subsections. In the first subsection we describe the EAs in terms of their proximity to larger towns, quality, and accessibility of roads. Subsection 2 describes the EAs in terms of access to tap water, sources of drinking water, and access and coverage quality of electricity, radio, and mobile phone. The third subsection describes whether or not telephone centers, post offices, daily and periodic markets, and veterinary service providers are available in the PA and distances to the nearest center providing such services if it is unavailable in the PA. In subsection 4 we provide a similar description in terms of elementary, junior, and high schools and 5 types of health services provision centers: government hospitals, public clinics or health posts, private clinics, pharmacies, and traditional medical service providers. In subsection 5 we describe the EAs in terms of timely availability and sufficiency of fertilizer and improved seeds, and access to and quality of agricultural extension services. In the final subsection we provide a description of the EAs in terms of access to financial cooperatives farmers associations, and microfinance institutions.

Proximity to Larger Towns and Roads Quality and Accessibility

Data was collected on names of and distances to large towns closest to the surveyed PAs. Summary statistics on distances to the nearest towns are provided in columns 3 to 5 of Annex Table C.1.1. On average, the PAs surveyed are about 14 kilometers (KMs) away from the closest town while one-half of the PAs were 10 km away. This indicates that EAs with large distances to nearest towns dominate the mean distance. Among the 304 PAs 10 are located in PAs with

relatively larger towns, as a result of which the distance was effectively zero. Distances in the remaining 294 EAs range from half a kilometer to 100 km. About 40 percent of the EAs are farther than the mean distance of 14 km, 20 percent are 20 km or more from the nearest town, 10 percent 27 km or more, while 2 percent are 50 km or farther than the nearest town.

Average distance and variation of distances to the nearest town is larger in AGP EAs relatively to non-AGP EAs. This pattern in average distances and its variation observed in the overall sample holds true when comparing AGP and non-AGP EAs in the 4 regions with the exception of Oromiya, in which average distance is smaller in AGP woredas. Relative to the national average, mean and median distances are larger in an average EA in Tigray and Amhara while they are smaller in Oromiya and SNNP. The mean distance to the closest town in the 30 AGP EAs in Amhara is more than twice the mean distance for the 30 non-AGP EAs of SNNP.

The community survey instrument comprised questions on the three most important roads linking the village to towns in different directions. Data on materials from which the roads are made of and how well accessible the roads are during rainy and dry seasons are collected. Accessibility is assessed in terms of means of transport that can be used. Responses to these questions were obtained for 292 of the 304 EAs while they were not obtained for 6 AGP and 6 non-AGP EAs. The last 4 columns of Table C. 1.1 summarize the materials from which the first most important roads are made while Table C.1.2 contains summary on the latter 2 questions. We will also briefly summarize data collected from 182 and 98 EAs on second and third important roads, respectively.

A large majority of the roads in the EAs surveyed were dirt tracked at 56 percent and accessible only on foot during rainy seasons. Roads made of stones are second in importance in an average EA and across AGP and non-AGP EAs, as well as in the corresponding regional subsamples, with some exceptions. The exceptions to this are: in an average and AGP EAs of Tigray roads made of concrete are more important, and in an average and non-AGP EAs in Amhara roads made of other materials are more important. On average, roads made of concrete/tarmac are last in importance at 11 percent. This held across AGP and non-AGP EAs of the overall sample and in all 3 categories of the 4 regions, with some exceptions. The exceptions are: in non-AGP woredas of Oromiya roads made of concrete/tarmac are third in importance, and in non-AGP EAs of Tigray and in AGP EAs of SNNP they are as much important as roads made of other materials.

Annex Table C.1.1. Distance to the nearest town and type of first important road, by region and AGP status.

Region	Category	Distance to nearest large town (KMs)			First important road made of (%)			
		Mean	Median	SD	Concrete	Stones	Dirt	Others
National	All woredas	13.9	10	12.2	11.0	18.8	55.8	14.4
	AGP woredas	14.4	10	13.7	13.4	21.6	49.0	16.0
	Non-AGP woredas	12.7	10	8.5	6.1	13.3	69.4	11.2
Tigray	All woredas	15.7	14	11.6	16.7	3.3	73.3	6.7
	AGP woredas	16.0	14	13.0	22.0	0.0	70.7	7.3
	Non-AGP woredas	14.9	14	7.9	5.3	10.5	78.9	5.3
Amhara	All woredas	16.6	12	12.3	5.6	22.2	48.6	23.6
	AGP woredas	17.1	12	13.2	8.0	28.0	40.0	24.0
	Non-AGP woredas	15.5	14	10.2	0.0	9.1	68.2	22.7
Oromiya	All woredas	12.6	10	9.7	13.9	26.6	43.0	16.5
	AGP woredas	12.2	10	10.4	13.5	30.8	36.5	19.2
	Non-AGP woredas	13.4	12	8.2	14.8	18.5	55.6	11.1
SNNP	All woredas	11.1	7	14.1	8.6	19.8	61.7	9.9
	AGP woredas	12.7	8	17.1	11.8	23.5	52.9	11.8
	Non-AGP woredas	8.2	7	5.5	3.3	13.3	76.7	6.7

Source: Authors' calculations using data from the AGP Baseline Survey, 2011.

In an average EA with data on second important roads, the large majority (51 percent) are dirt tracks and the proportion of roads made of stones is second largest and this pattern holds in AGP and non-AGP EAs. Roads made of concrete/tarmac are third in importance in an average and AGP EAs while concrete/tarmac roads are least in importance in non-AGP EAs. The pattern observed in the overall sample of EAs about which materials second important roads made of holds across regions and their AGP-non-AGP subsamples. However, there are more exceptions in the case of the second important road than in the first. Just to highlight the case, despite the importance of dirt tracked roads in the 3 categories of the overall sample of EAs, in Oromiya the proportion of roads made of stones is larger than those that are dirt tracked. Similarly, although roads made of stones are second in importance in the 3 categories of the overall sample this holds true in only non-AGP EAs of Tigray and in the 3 categories of SNNP.

In the 82 EAs from which information about the third important roads was elicited, 48 percent are made of dirt tracks and roads made of stones are second in importance at 22.4 percent. Roads made of concrete/tarmac are least important at 12 percent in both the overall and AGP EAs while in non-AGP EAs an equal proportion of roads are made of tarmac/concrete and other materials.

A large majority of 47.4 percent of the roads in an average EA are accessible only on foot during rainy seasons and the pattern holds in all other categories, with only one category excepted (Table C.1.2). The exception is that a relatively larger proportion of roads are accessible during rainy seasons to any vehicle in AGP EAs of Tigray, although the proportion accessible on foot is a close second. This is despite the proportion of dirt roads in AGP EAs of Tigray is the largest relative to an average, AGP, and non-AGP EAs of all other regions (excepting non-AGP EAs of the same region and that of SNNP).

Annex Table C.1.2. Accessibility of the first most important road, by region and AGP status.

Region	Category	Accessibility of first important road during rainy season (%)					Accessibility of first important road during dry season (%)				
		Any vehicle	Trucks and buses	Mini-bus	Carts or animals	Only walking	Any vehicle	Trucks and buses	Mini-bus	Carts or animals	Only walking
National	**All woredas**	30.6	6.2	2.4	13.4	47.4	45.9	7.9	8.9	10.3	27.1
	AGP woredas	34.4	5.7	2.6	13.0	44.3	50.5	6.8	7.8	9.4	25.5
	Non-AGP woredas	23.2	7.1	2.0	14.1	53.5	37.0	10.0	11.0	12.0	30.0
Tigray	**All woredas**	38.6	10.5	7.0	3.5	40.4	58.6	12.1	17.2	0.0	12.1
	AGP woredas	44.7	5.3	7.9	2.6	39.5	64.1	10.3	12.8	0.0	12.8
	Non-AGP woredas	26.3	21.1	5.3	5.3	42.1	47.4	15.8	26.3	0.0	10.5
Amhara	**All woredas**	31.1	1.4	1.4	8.1	58.1	51.4	5.4	8.1	6.8	28.4
	AGP woredas	38.0	2.0	2.0	8.0	50.0	60.0	4.0	6.0	4.0	26.0
	Non-AGP woredas	16.7	0.0	0.0	8.3	75.0	33.3	8.3	12.5	12.5	33.3
Oromiya	**All woredas**	35.0	8.8	0.0	16.3	40.0	38.8	10.0	0.0	18.8	32.5
	AGP woredas	37.7	9.4	0.0	13.2	39.6	43.4	7.5	0.0	17.0	32.1
	Non-AGP woredas	29.6	7.4	0.0	22.2	40.7	29.6	14.8	0.0	22.2	33.3
SNNP	**All woredas**	20.0	5.0	2.5	22.5	50.0	38.8	5.0	12.5	12.5	31.3
	AGP woredas	19.6	5.9	2.0	25.5	47.1	38.0	6.0	14.0	14.0	28.0
	Non-AGP woredas	20.7	3.4	3.4	17.2	55.2	40.0	3.3	10.0	10.0	36.7

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

The proportion of roads that are accessible to any vehicle during rainy seasons is second in importance at about 31 percent. This pattern holds in AGP and non-AGP categories of the overall sample and in all 3 categories of the 4 regions, with 3 categories excepted. The exceptions are: AGP EAs of Tigray, and average and AGP EAs of SNNP, for which the proportion accessible to any vehicle is third in importance next to those accessible to carts or animals. By contrast the proportion accessible to carts or animals is third largest in the 3 categories of the overall sample, Amhara, and Oromiya, and in non-AGP EAs of SNNP. Roads accessible to trucks and buses during rainy seasons are fourth in importance in all categories, with the exception of average and non-AGP EAs in Tigray, for which it is third in importance. The proportion of roads accessible to mini-buses during rainy seasons is the least important in the 3 categories of the overall sample as well as in average and AGP EAs of SNNP. The proportion accessible to mini-

buses is as much important as those accessible to trucks and buses in the 3 categories of Amhara and in non-AGP EAs of SNNP. In Tigray, roads accessible to mini-buses are fourth in importance for average and non-AGP EAs while it is third in importance in AGP EAs.

At an average value of 46 percent, the large majority of the roads are accessible to any vehicle during dry seasons. This holds also in average, AGP, and non-AGP EAs of all regions, with only 2 exceptions. The exceptions to this are non-AGP EAs of Amhara, in which the proportion is the same with those suitable for only walking, and in non-AGP EAs of Oromiya, in which the largest proportion are accessible only on foot even during dry seasons. Particularly, the pattern in accessibility of roads in non-AGP EAs of Oromiya is the same in both rainy and dry seasons.

The proportion accessible only on foot during dry seasons is second largest in an average EA of the overall sample, Amhara, Oromiya, and SNNP; and in AGP EAs of the overall sample and all 4 regions, and in non-AGP EAs of the overall sample and SNNP. The proportion of roads accessible to carts or animals is third largest in all 3 categories of the overall sample and in Oromiya while it is equally important as those accessible to mini-buses in all 3 categories of SNNP and in non-AGP EAs of Amhara. In an average and AGP EAs of Amhara roads accessible to carts or animals is fourth in importance while it is least in importance in all 3 categories of Tigray. Although roads accessible to mini-buses during dry seasons are fourth in importance in the aggregate sample they are not so in all of the regions. The proportion accessible to mini-buses is second in importance across all 3 categories of Tigray, third in importance for an average and AGP EAs of Amhara, and least in importance in all 3 categories of Oromiya. Roads accessible to trucks and buses in dry seasons are least in importance in the aggregate sample, in all 3 categories of SNNP, and in average and non-AGP EAs of Amhara.

Sources of Drinking Water and Access to Electricity, Radio, and Mobile Phone

In this section we describe community data on access to public or private piped water and most important sources of drinking water (Table C.1.3) and access to and coverage quality of electricity, cell phone, and radio (Table C.1.4). Accordingly, (public) piped water is available in 110 (36 percent) of the 304 EAs with slightly better access in non-AGP EAs. Relative to average and AGP EAs in Amhara a significantly large proportion of non-AGP EAs have access to piped water. The latter has resulted in the relatively better access of non-AGP EAs nationally, given that AGP EAs have relatively better access in all other regions. Regionally, a significantly larger proportion of EAs in Tigray and a slightly larger proportion in Amhara have access to piped water, relative to an average EA in the overall sample.

Although 36 percent of the EAs have access to piped water it serves as the most important source of drinking water for only about 22 percent of the EAs during dry seasons. During dry season piped water is the third most important source of drinking water, next to springs and rivers, while wells (boreholes) are fourth in importance, and lakes and other sources are least in importance. The only exception to the latter is that tap water is more important than rivers in non-AGP EAs. At 45 percent the largest proportion of EAs in Tigray get their drinking water from pipes during dry seasons, making Tigray best performing in tap water. The proportion of EAs that obtain most of their drinking water from piped sources is lower in the 3 categories of all other regions, relative to their national counterparts. The two exceptions are the slightly larger proportion of non-AGP EAs in Amhara and AGP EAs in Oromiya.

Respondents were also asked to list second, third, and fourth important sources of drinking water, if they use them. All 304 EAs listed the second important source. Rivers are the second important source of drinking water for a largest proportion of EAs at 33 percent closely followed by those using springs at about 31 percent. The proportion of EAs using piped water as their second important source of drinking water is the third largest, while those using wells and lakes and other are fourth and fifth largest, respectively. The pattern observed in the aggregated sample holds in Amhara with the exception that the proportion using springs is larger than those using rivers. Similarly the pattern in the aggregate sample holds in Oromiya and SNNP, with the exception that the proportion using wells is larger than those using tap water in both regions and the proportion using springs is larger than those using rivers in SNNP.

The second largest proportion of EAs use wells (boreholes) as their second important source of drinking water in Tigray during dry seasons, next to piped water. Springs, rivers, and lakes and other sources are third to fifth as the second important source of drinking water in Tigray. A largest and second largest proportion of EAs use springs and rivers as their second important source of drinking water in all 3 categories of Amhara, Oromiya, and SNNP, with the exception that those using tap water is larger in non-AGP EAs of Amhara. The proportion of EAs that use wells, piped water, and lakes and other sources as their most important source of drinking water is third to fifth largest in Amhara. In Oromiya and SNNP the proportion using tap water, wells, and lakes and others as their most important source of drinking water is third to fifth largest.

Annex Table C.1.3. Tap water access and sources of drinking water, by region and AGP status.

Region	Woreda	Proportion with access to tap water (%)	First important sources of drinking water during dry seasons (%)					Second important source of drinking water during dry seasons (%)				
			Tap water	Wells/ bore holes	Spring	River	Lakes and others	Tap water	Wells/ bore holes	Spring	River	Lakes and others
National	**All woredas**	36.2	21.7	12.8	39.8	23.7	2.0	17.8	13.8	30.6	33.2	4.6
	AGP woredas	35.5	20.0	12.0	40.0	25.5	2.5	15.5	13.0	32.5	35.5	3.5
	Non-AGP woredas	37.5	25.0	14.4	39.4	20.2	1.0	22.1	15.4	26.9	28.8	6.7
Tigray	**All woredas**	54.8	45.2	27.4	17.7	8.1	1.6	37.1	21.0	17.7	22.6	1.6
	AGP woredas	57.1	45.2	23.8	21.4	7.1	2.4	38.1	19.0	16.7	23.8	2.4
	Non-AGP woredas	50.0	45.0	35.0	10.0	10.0	0.0	35.0	25.0	20.0	20.0	0.0
Amhara	**All woredas**	38.8	17.5	18.8	37.5	22.5	3.8	21.3	13.8	32.5	30.0	2.5
	AGP woredas	30.2	11.3	20.8	35.8	26.4	5.7	15.1	15.1	39.6	28.3	1.9
	Non-AGP woredas	55.6	29.6	14.8	40.7	14.8	0.0	33.3	11.1	18.5	33.3	3.7
Oromiya	**All woredas**	27.2	16.0	6.2	46.9	29.6	1.2	11.1	12.3	28.4	39.5	8.6
	AGP woredas	29.6	20.4	3.7	42.6	33.3	0.0	9.3	11.1	22.2	50.0	7.4
	Non-AGP woredas	22.2	7.4	11.1	55.6	22.2	3.7	14.8	14.8	40.7	18.5	11.1
SNNP	**All woredas**	28.4	13.6	2.5	51.9	30.9	1.2	6.2	9.9	40.7	38.3	4.9
	AGP woredas	29.4	7.8	2.0	56.9	31.4	2.0	3.9	7.8	49.0	37.3	2.0
	Non-AGP woredas	26.7	23.3	3.3	43.3	30.0	0.0	10.0	13.3	26.7	40.0	10.0

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

About 19 percent of the 304 EAs have access to electricity services with better access to electricity in AGP EAs. All 3 categories of EAs in Tigray and average and AGP EAs in Amhara have better access to electricity, relative to their national counterparts. Access to electricity is poorer in non-AGP EAs in Amhara, and in all 3 categories of EAs in Oromiya and SNNP, relative to their national counterparts. Out of the 57 EAs with access to electricity in only 13 (23 percent) is the services excellent (available all the time) or good (available most of the time). In 23 of the EAs (40.4 percent) the services are fair (available about half the time), while in 21 of the EAs (37 percent) services are poor (available less than half the time) or erratic (rarely available). In a large proportion of the EAs in Tigray, i.e. 39 percent, electricity services are excellent or good followed by poor or erratic services, at 33 percent. In Amhara, electricity services are fair for the largest proportion followed by poor or erratic services, which is about the same in Oromiya. For an average EA in SNNP about the same proportion of EAs have fair and poor or erratic electricity services. All non-AGP EAs of SNNP have fair electricity services while in AGP EAs of SNNP services are fair to a third of the EAs and poor or erratic for two-thirds. Most notable in SNNP is that in none of the EAs services are excellent or good.

Annex Table C.1.4. Electricity, cell phone, and radio - access and quality of services, by region and AGP status.

Region	Woreda	Access and reliability of electricity				Access and quality of cell phone cover (%)				Access and quality of radio broadcasts (%)			
		Proportion with access (%)	Excellent or good	Fair	Poor or erratic	Proportion with access (%)	Excellent or good	Fair	Poor or erratic	Proportion with access (%)	Excellent or good	Fair	Poor or erratic
National	All woredas	18.8	22.8	40.4	36.8	73.0	22.1	37.4	40.5	96.7	62.9	27.9	9.2
	AGP woredas	20.0	22.5	37.5	40.0	73.5	19.0	40.8	40.1	96.5	66.3	27.5	6.2
	Non-AGP woredas	16.3	23.5	47.1	29.4	72.1	28.0	30.7	41.3	97.1	56.4	28.7	14.9
Tigray	All woredas	29.0	38.9	27.8	33.3	69.4	32.6	39.5	27.9	98.4	73.8	23.0	3.3
	AGP woredas	23.8	40.0	30.0	30.0	73.8	25.8	45.2	29.0	100.0	73.8	23.8	2.4
	Non-AGP woredas	40.0	37.5	25.0	37.5	60.0	50.0	25.0	25.0	95.0	73.7	21.1	5.3
Amhara	All woredas	22.5	16.7	44.4	38.9	80.0	25.0	32.8	42.2	97.5	66.7	19.2	14.1
	AGP woredas	26.4	14.3	35.7	50.0	73.6	23.1	35.9	41.0	98.1	73.1	17.3	9.6
	Non-AGP woredas	14.8	25.0	75.0	0.0	92.6	28.0	28.0	44.0	96.3	53.8	23.1	23.1
Oromiya	All woredas	16.0	23.1	46.2	30.8	87.7	11.3	39.4	49.3	96.3	59.0	35.9	5.1
	AGP woredas	18.5	30.0	50.0	20.0	83.3	11.1	37.8	51.1	94.4	64.7	33.3	2.0
	Non-AGP woredas	11.1	0.0	33.3	66.7	96.3	11.5	42.3	46.2	100.0	48.1	40.7	11.1
SNNP	All woredas	9.9	0.0	50.0	50.0	54.3	25.0	38.6	36.4	95.1	54.5	32.5	13.0
	AGP woredas	11.8	0.0	33.3	66.7	62.7	18.8	46.9	34.4	94.1	54.2	35.4	10.4
	Non-AGP woredas	6.7	0.0	100	0.0	40.0	41.7	16.7	41.7	96.7	55.2	27.6	17.2

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Out of the 304 EAs, 222 or 73 percent have cell phone coverage. Out of the EAs with cell phone coverage the signals in a largest proportion of 40.5 percent is poor or erratic, it is fair in 37.4 percent, and excellent or good in 22 percent. The pattern in the overall sample holds in non-AGP EAs while a slightly larger proportion in AGP EAs receive fair signals than those receiving poor or erratic signals. The pattern observed for an average EA holds in all 3 categories of Amhara and Oromiya. The proportion of EAs receiving fair signals is larger than those receiving poor or erratic signals in average and AGP EAs of SNNP while in non-AGP EAs of SNNP an equally large proportion receive excellent or good and poor or erratic signals. For an average EA in Tigray the proportion receiving fair and excellent or good signals is largest and second largest, respectively, while the order is fair and poor or erratic in AGP EAs, and in non-AGP EAs the proportion receiving excellent or good signals is the largest while the other two are equally important.

Radio broadcasts or signals are received in 294 (about 97 percent) of the EAs, out of this total 185 (63 percent) receive excellent or good signals, in 82 EAs (28 percent) the signals are fair, while in only 27 (9 percent) the signals are poor or erratic. Not only are the proportion of AGP and non-AGP EAs with radio signals about the same at 97 percent, but also most categories are close in the proportion of EAs receiving radio signals, ranging in the narrow band of 94.1 to 100. Moreover, the pattern in quality of radio signals observed in the overall sample holds in all other categories.

Access to Social Services, Markets, and Veterinary Services

In this section we describe data collected on whether or not public telephone centers, post offices, daily markets, periodic markets (that open at least once per week), and veterinary services are available in the PA and distances to the nearest center out of the PA providing such services if unavailable in the PA. Summary results of the data are provided in Table C.1.5.

While 34 percent of the EAs have one telephone center in the PA, 4.6 percent have two or more telephone centers; implying 61.4 percent do not have telephone centers in their respective PAs. Relative to an average, AGP, and non-AGP EAs nationally, a larger proportion in Tigray have at least one telephone center while a lower proportion in Oromiya and SNNP have such services. Average and AGP EAs in Amhara perform worse than their national counterpart while non-AGP Amhara EAs perform better. Residents of the 187 EAs that do not have telephone centers, on average, travel 14.7 km while the median distance is 12 km. Distances travelled to telephone centers range between the lowest averages of 10.2 km in non-AGP EAs of SNNP to 21.8 km in non-AGP EAs of Amhara.

Only 23 of the 304 EAs (7.6 percent) have a post office in the PA, with non-AGP EAs performing slightly better. The only region with all 3 subgroups performing better in access to post offices is SNNP; particularly, non-AGP EAs of SNNP have a rather large proportion of 20 percent. All 3 categories of Amhara and Oromiya perform worse relative to their national counterparts. While average and AGP EAs in Tigray perform better than their national counterpart, non-AGP EAs in Tigray perform worse. While residents of EAs with no post offices on average travel 25 km to the nearest post office out of the Pas, the median distance is 18 km. Surprisingly, in SNNP (which performs better in terms of presence of post office in the PAs), residents of EAs with no post office travel the longest relative to their national and regional counterparts. Distance to the nearest post office out of the PA ranged between averages of 20.7 km in AGP EAs of Oromiya to 34.5 km in non-AGP EAs of SNNP.

Only 14.3 percent of the EAs have daily markets within the PA. This averaged about 8 percent in Tigray and Oromiya, both of which perform worse in all 3 categories relative the corresponding nationwide categories, while the average is about 20 percent in Amhara and SNNP, both of which perform better in all 3 categories relative the corresponding national averages. The average distance to the nearest daily market out of the PA is 21.5 km and it was lower in AGP EAs. Although a larger proportion of EAs in Amhara and SNNP have daily markets, distances travelled by residents of average and non-AGP EAs with no markets is larger than the corresponding national average. With the exception of residents of non-AGP EAs of Tigray, those with no daily markets in Tigray travel longer than their national counterparts. Although the proportion of EAs with daily markets is the smallest in Oromiya residents of EAs with no daily markets travel the shortest average distance of about 15 km.

Relative to the proportion with daily markets, a significantly larger proportion of 48 percent have periodic markets that open at least once per week with AGP EAs performing better. This aside the general pattern observed in daily markets almost repeats: a larger proportion of EAs in Amhara and SNNP have periodic markets and a lower proportion of EAs in Oromiya and Tigray have periodic markets. The exception relative to daily markets is that a larger proportion of non-AGP Tigray EAs have periodic markets. Residents of EAs in which periodic markets are not available travel about 12 km to the nearest market out of the PA, with AGP EAs travelling less, and the median distance is 9 km. Relative to the 3 national subsamples, residents in an average EA in Tigray and SNNP and AGP EAs of Tigray and non-AGP EAs of SNNP travel longer while residents in all 3 categories of Amhara and Oromiya travel shorter.

About 32 percent of the EAs have one or more veterinary service providers with AGP EAs performing better. Average and non-AGP EAs of Tigray have lower access to veterinary services than their national counterparts. All 3 categories of Amhara perform better relative to the corresponding national categories in access to veterinary services while all 3 categories of Oromiya and average and AGP EAs of SNNP perform worse. Residents of EAs with no veterinary services on average travel about 15 km with residents AGP EAs travelling less. Residents of average and non-AGP EAs of Tigray and Amhara travel less relative to their national counterparts. Residents of all 3 categories of Oromiya and SNNP where there are no veterinary services travel shorter and longer, respectively, relative to their national counterparts.

Annex Table C.1.5. Access to markets and services, by region and AGP status

Region	Category	Number of telecenters in PA (%)		Distance to nearest telecenter out of PA (KMs)		Post offices in PA (%)	Distance to nearest post office out of PA (KMs)		Number of daily markets in PA (%)		Distance to nearest daily market out of PA (KMs)		Number of periodic (at least once per week) markets in PA (%)		Distance to nearest periodic market out of PA (KMs)		Number of veterinary service providers in PA (%)		Distance to nearest veterinary service provider out of PA (KMs)	
		1	2 or more	Mean	SD	1	Mean	SD	1	2 or more	Mean	SD	1	2 or more	Mean	SD	1	2 or more	Mean	SD
National	All woredas	34.0	4.6	14.7	12.0	7.6	25.1	21.7	13.3	1.0	21.5	37.1	43.2	4.6	11.8	32.2	30.4	1.3	14.9	37.8
	AGP woredas	33.2	4.5	14.3	12.0	7.0	24.7	20.1	12.2	1.5	17.8	17.0	45.7	4.5	9.0	8.9	32.7	1.5	12.7	19.5
	Non-AGP woredas	35.6	4.8	15.5	12.1	8.7	25.8	24.7	15.5	0.0	29.2	59.9	38.5	4.8	16.8	51.6	26.0	1.0	18.6	56.5
Tigray	All woredas	46.8	19.4	15.5	10.4	8.1	26.4	23.2	4.9	3.3	22.5	22.3	38.7	1.6	12.1	9.7	29.0	0.0	13.7	9.0
	AGP woredas	42.9	16.7	15.6	11.1	9.5	28.9	25.5	7.1	4.8	22.3	23.5	35.7	0.0	12.0	10.2	38.1	0.0	13.6	10.2
	Non-AGP woredas	55.0	25.0	15.3	6.4	5.0	21.3	17.3	0.0	0.0	22.8	20.1	45.0	5.0	12.3	8.7	10.0	0.0	13.9	7.6
Amhara	All woredas	36.3	1.3	16.5	13.5	5.0	21.1	16.7	18.8	1.3	21.8	39.3	51.3	6.3	9.8	6.7	40.0	1.3	14.2	10.7
	AGP woredas	32.1	1.9	14.3	11.5	3.8	21.2	17.2	15.1	1.9	15.7	13.3	56.6	7.5	8.7	6.0	39.6	1.9	13.3	10.4
	Non-AGP woredas	44.4	0.0	21.8	16.8	7.4	20.8	16.0	25.9	0.0	36.8	69.3	40.7	3.7	11.4	7.4	40.7	0.0	15.8	11.6
Oromiya	All woredas	27.5	1.3	16.4	12.0	5.0	22.3	15.5	7.7	0.0	14.8	11.3	36.3	2.5	8.7	6.3	22.5	2.5	10.5	8.4
	AGP woredas	30.2	1.9	16.0	12.7	7.5	20.7	15.4	3.9	0.0	16.6	11.8	39.6	3.8	7.9	6.7	22.6	3.8	10.4	9.4
	Non-AGP woredas	22.2	0.0	17.0	11.0	0.0	25.2	15.6	14.8	0.0	11.0	9.3	29.6	0.0	10.0	5.3	22.2	0.0	10.6	6.4
SNNP	All woredas	28.4	0.0	11.3	10.6	12.3	31.2	28.7	19.8	0.0	27.6	57.4	45.7	7.4	17.4	64.4	29.6	1.2	21.2	71.2
	AGP woredas	29.4	0.0	11.9	12.1	7.8	29.5	21.5	21.6	0.0	17.5	18.6	49.0	5.9	6.9	11.2	31.4	0.0	14.1	34.4
	Non-AGP woredas	26.7	0.0	10.2	7.5	20.0	34.5	39.5	16.7	0.0	45.6	90.9	40.0	10.0	33.4	101.5	26.7	3.3	32.7	107.2

Source: Authors' calculations using data from the AGP Baseline Survey, 2011.

Access to Education and Health Services

Only 5 percent of the surveyed EAs do not have primary schools in their PAs. Out of the 95 EAs with at least one primary school 62 percent have one, 17 percent have 2, and 16 percent have 3 primary schools. Amhara constitutes a region with universal primary school coverage as do non-AGP EAs of Tigray. Except for AGP EAs in Oromiya, which have the lowest coverage of 88 percent resulting in an overall average of about 90 percent in Oromiya, the minimum coverage of primary schools is 93 percent in all other categories. A pupil in an average EA with no primary school travelled about 4.4 km while students in one-half of the EAs with no primary school travelled 3 or more km. The distance travelled is slightly longer in AGP EAs. This is mainly because of a non-AGP EA in Tigray, which is 17 km away from the nearest primary school. Disregarding this EA the average distance travelled by a student is 3.3 km while the maximum distance is 6 km.

About 46 percent of the EAs have a junior secondary school (JSS) in the PAs while 5.6 percent have two junior secondary schools (JSS), with students in 48.5 percent (147) of the EAs that do not have JSS travelling an average of 12 km to the nearest school. Distances travelled to JSS range from 0.5 to 70 km, the median distance is 9 km, and students in 10 percent of the EAs travel 30 to 70 km. Relative to their national counterpart, access to JSS is better in all 3 categories of Amhara, particularly in non-AGP EAs that have JSS coverage about 20 percent larger than the national non-AGP average of 11.7 percent. Access to JSS is worse in all 3 categories of Tigray and SNNP. Non-AGP EAs in Oromiya perform better while AGP EAs and an average EA in the region perform worse than their national counterparts. Despite the poor performance in access to JSS in SNNP, distances travelled by students in all 3 categories of SNNP are shorter while the opposite holds in Amhara, the region that perform better in access to JSS, both relative to distances travelled by their national counterparts. Not only perform EAs in all 3 categories in Tigray worse in access to JSS but also students in an average and AGP EAs in Tigray travel longer relative to students in their national counterparts.

Annex Table C.1.6. Number of schools in PAs and distances travelled where unavailable, by region and AGP status

Region	Woreda	Proportion with primary schools in PA (%)		Dist. to nearest primary school out of PA (KMs)		Proportion with junior high schools in PA (%)		Dist. to nearest junior high school out of PA (KMs)		Proportion with one high school in PA (%)	Dist. to nearest high school out of PA (KMs)	
		1	2 or more	Mean	SD	1	2 or more	Mean	SD		Mean	SD
National	All woredas	62.3	33.0	4.4	4.2	45.9	5.6	12.0	11.3	5.6	18.2	16.3
	AGP woredas	59.9	35.0	5.1	4.6	41.5	5.5	12.1	12.0	6.0	18.5	16.0
	Non-AGP woredas	67.0	29.1	2.3	1.2	54.4	5.8	11.7	9.3	4.8	17.8	16.9
Tigray	All woredas	41.9	56.5	17.0	_	43.5	16.1	12.9	9.9	6.6	20.1	19.7
	AGP woredas	31.0	66.7	17.0	_	40.5	16.7	13.8	10.2	7.3	21.3	21.6
	Non-AGP woredas	65.0	35.0	_	_	50.0	15.0	9.8	9.5	5.0	17.7	15.8
Amhara	All woredas	46.8	53.2	_	_	59.5	5.1	16.2	16.0	6.3	19.4	15.7
	AGP woredas	49.1	50.9	_	_	52.8	7.5	15.5	16.6	9.4	19.1	16.6
	Non-AGP woredas	42.3	57.7	_	_	73.1	0.0	18.3	15.1	0.0	19.9	14.2
Oromiya	All woredas	75.6	14.1	3.3	1.5	46.9	3.7	11.7	8.5	3.7	16.5	12.2
	AGP woredas	72.5	15.7	3.8	1.3	42.6	0.0	11.9	9.2	3.7	16.7	12.3
	Non-AGP woredas	81.5	11.1	2.0	1.4	55.6	11.1	10.9	6.1	3.7	15.9	12.1
SNNP	All woredas	80.2	13.6	3.3	1.3	33.3	0.0	9.6	10.1	6.2	17.5	17.7
	AGP woredas	82.4	11.8	3.3	1.5	29.4	0.0	9.3	11.4	3.9	17.6	13.7
	Non-AGP woredas	76.7	16.7	3.0	_	40.0	0.0	10.1	7.4	10.0	17.4	23.7

Source: Authors' calculations using data from the AGP Baseline Survey, 2011.

Only 17 (about 6 percent) of the EAs have high schools in their PAs. There are 3 high schools in the 30 non-AGP EAs of SNNP and 5 high schools in the 53 AGP EAs of Amhara, categories which performed first and second best. There are no high schools in the 27 non-AGP EAs of Amhara, which performs worst and contrasts to the AGP EAs in the same region. Both AGP and non-AGP EAs in Oromiya perform worse, next to non-AGP EAs in Amhara, with a ratio of 1 high school in 27 EAs. On average, high school students travel about 18.2 km, which is about 50 percent longer than distance travelled to junior secondary schools. Distances travelled by high school students range from 0.5 to 125 km, students in one-half of the EAs travel 14 km or more, students in 20 and 10 percent of the EAs travel 26 and 36 km or more. Relative to the corresponding national categories, distances travelled by students in all 3 categories of Amhara, in average and AGP EAs of Tigray are longer, while distances travelled by students in all 3 categories of Oromiya and SNNP are shorter.

Government hospitals are available in only 8 (2.6 percent) of the 304 EAs. AGP EAs of Amhara, Oromiya, and SNNP each have a hospital, AGP EAs of Tigray have 2 hospitals and non-AGP EAs of SNNP, which perform best, have 3 hospitals. Residents of the 296 EAs that do not have

hospitals in their PAs travel an average of 56 km to the nearest government hospital for treatment while the median distance is 45 km. In the national sample, distances travelled by residents where hospitals are unavailable range from 0.5 to 250 km. Residents in 30 percent of these EAs travel 72 km or more, residents in 20 percent of the EAs travel 90 km or more, and residents in the most remote 10 percent EAs travel 120 km or longer to the nearest government hospital.

Government clinics or health posts are available in 235 (77.3 percent) of the 304 EAs out of which 15 EAs (about 5 percent) have two such clinics. Non-AGP woredas are endowed with slightly more government clinics. Relative to the corresponding national average, the proportion of EAs with at least one government clinic is larger in all 3 categories of Tigray and SNNP; particularly, non-AGP EAs in Tigray have a markedly higher clinic availability of 95 percent. A lower proportion of EAs in all 3 categories of Oromiya and average and non-AGP EAs in Amhara have clinics. In 6 of the 26 EAs where government clinics/health posts are not available there are private clinics. Residents of the 26 EAs in which government clinics are unavailable travel 11 km to the nearest health clinic out of the PA, with a median distance of 9.2 KMs. Residents in AGP EAs travel 4.5 km longer than those in non-AGP EAs. Residents in average and AGP EAs of Tigray and Oromiya, and residents in all 3 categories of EAs in SNNP travel longer than their national counterparts while those in average and AGP EAs of Amhara travel shorter distances.

There are 62 private clinics operating in 49 of the 304 EAs; that is, there are 36 EAs in which there is a single private clinic and 13 EAs with 2 private clinics. AGP EAs of Amhara and non-AGP EAs of SNNP have relatively larger proportion of private clinics with 28 and 21 percent of the EAs served by at least one private clinic, respectively. By contrast non-AGP and AGP EAs of Tigray perform worst with at least one private clinic in only 5 and 10 percent of them, respectively. In the 255 EAs where private clinics are unavailable, residents on average travel 18 km to the nearest such center out of the PA. Distances to the nearest private clinic out of the PA ranged from 0.5 to 158 km while the median distance is 12 km. Residents in 20 and 10 percent of the EAs travel 24 and 36 km or more, respectively. Relative to the 3 categories of the overall sample, distances travelled by residents in all 3 categories of EAs in Tigray are longer and those in the remaining 3 regions are shorter. The only exception to this is non-AGP EAs of SNNP, where residents travel a kilometer longer than those in the corresponding national average.

Annex Table C.1.7. Access to health facilities in PAs and distances travelled where unavailable, by region and AGP status

Region	Category	Prop. with a gov. hospital in PA (%)	Dist. to nearest gov. hospital out of PA (km)		Prop. with gov. health clinics/posts in PA (%)	Dist. to nearest gov. health clinic/ post out of PA (km)		Prop. with private clinics in PA (%)	Dist. to nearest private clinic out of PA (km)		Prop. with pharmacies in PA (%)	Dist. to nearest pharmacy out of PA (km)		Prop. with traditional medical service providers in PA (%)	Dist. to nearest traditional medical service provider out of PA (km)	
			Mean	SD		Mean	SD		Mean	SD		Mean	SD		Mean	SD
National	All woredas	2.6	55.8	45.5	77.3	11.0	9.2	16.3	17.8	18.9	10.0	19.0	20.3	15.0	32.0	39.3
	AGP woredas	2.5	53.9	45.7	76.5	12.4	10.2	17.7	17.9	21.1	11.6	19.2	22.3	14.9	29.3	37.3
	Non-AGP woredas	2.9	59.2	45.1	78.8	7.9	5.5	13.7	17.5	14.3	6.9	18.5	16.4	15.3	37.4	42.9
Tigray	All woredas	3.3	52.4	44.7	85.5	11.6	7.7	8.2	29.1	29.0	16.4	23.2	23.0	31.7	30.4	32.3
	AGP woredas	4.9	59.2	50.5	81.0	13.3	6.7	9.8	33.4	34.1	17.1	26.3	26.3	31.7	30.7	33.6
	Non-AGP woredas	0.0	39.2	27.4	95.0	0.0	_	5.0	21.3	13.2	15.0	26.3	26.3	31.6	29.7	30.6
Amhara	All woredas	1.3	74.7	55.7	78.8	9.5	4.8	22.8	15.4	12.7	2.5	22.3	27.1	10.6	30.8	40.4
	AGP woredas	1.9	72.1	57.9	84.9	9.8	5.2	28.3	14.4	13.6	3.8	21.9	29.7	9.8	25.4	33.8
	Non-AGP woredas	0.0	79.3	52.4	66.7	9.3	4.7	11.5	16.9	11.1	0.0	23.0	22.2	12.5	41.7	50.4
Oromiya	All woredas	1.2	43.4	32.5	65.4	11.1	9.0	17.5	12.4	8.8	8.6	15.0	10.9	8.0	29.6	34.0
	AGP woredas	1.9	38.3	29.6	59.3	12.6	9.3	18.9	11.5	9.2	11.1	14.8	11.9	10.4	28.0	32.9
	Non-AGP woredas	0.0	53.3	36.1	77.8	5.0	4.2	14.8	14.0	7.9	3.7	15.2	9.1	3.7	32.6	36.5
SNNP	All woredas	4.9	51.8	40.6	81.5	12.4	14.0	15.0	15.7	16.5	14.1	16.1	15.2	13.1	37.0	47.7
	AGP woredas	2.0	48.3	35.5	82.4	13.7	17.1	11.8	14.2	13.5	15.7	15.2	13.7	10.4	34.2	47.2
	Non-AGP woredas	10.0	58.2	48.6	80.0	10.0	6.8	20.7	18.5	21.3	11.1	17.8	17.8	17.9	43.5	49.6

Source: Authors' calculations using data from the AGP Baseline Survey, 2011.

There are 33 pharmacies providing services in 30 EAs, with 3 EAs served by 2 pharmacies. AGP EAs in Tigray and SNNP perform better in terms of availability of pharmacies with 17 and about 16 percent of the EAs served by at least one pharmacy. By contrast, there are no pharmacies in non-AGP EAs of Amhara, which do not also have government hospitals that often include pharmacies as part of their services. Non-AGP EAs in Oromiya and AGP EAs in Amhara have the next 2 lowest proportions at about 4 percent. Residents of the 274 EAs where pharmacies are unavailable in their PAs travel 19 km to the nearest pharmacy out of the PA, with the distance slightly shorter for non-AGP residents. Distances travelled by residents of EAs where pharmacies are unavailable range from 0.5 to 193 km, the median is 14 km, and residents in 20 percent of the EAs travelled 25 km or more while those in the farthest 10 percent travel 42 km or more. Distances travelled to pharmacies out of the PA are longer in all 3 categories of EAs in Tigray and Amhara and shorter in Oromiya and SNNP, relative to corresponding national averages.

Out of the 304 EAs 29 (10 percent) are served by a single local (cultural) medication center, while about 5 percent are served by 2 or more local medication centers, ranging up to 8 such centers in an AGP EA in Tigray. The proportion of EAs served by local medication centers is generally higher in Tigray with the proportion of EAs in all 3 categories of Tigray about twice the proportion in average, AGP, and non-AGP EAs of the overall sample as well as in the remaining 3 regions, with the exception of non-AGP EAs in SNNP. By contrast, all 3 categories of Amhara, Oromiya, and SNNP have lower proportion of EAs with local medical centers relative to their national counterparts, again with the exception of non-AGP EAs in SNNP. Distances travelled to local medical centers average 32 km, the median is 17 km, and it ranges from 0.5 to 210 km. Distances travelled by residents of EAs with no local medical centers is larger than their national counterparts in all 3 categories of EAs in SNNP, AGP EAs in Tigray, and non-AGP EAs of Amhara.

Access and Patterns of Distribution of Modern Inputs: Fertilizer, Improved Seeds, and Extension

In this section we describe data collected in 2 parts of the community survey. The first part pertains to the timely availability, sufficiency, and distribution criterion of fertilizer and improved seeds. The second is on availability of extension offices, trends in quality of service provision, and on the number and qualitative aspects of extension agents. We provide summary results of the first part in Table C.1.8 and the second part is summarized in Table C.1.9.

Out of the 300 EAs that responded to the question enquiring whether or not fertilizer was available before Meher 77 percent (232) responded in the affirmative. The proportion of EAs where fertilizer was made available before Meher is larger in all 3 categories of EAs in SNNP, in average and non-AGP EAs of Tigray, and in AGP EAs in Amhara, relative to their national counterparts. In about 88 percent of the EAs where fertilizer was made available before Meher there is enough fertilizer, with a slightly larger proportion of AGP EAs facing fertilizer shortage at 16 percent. The proportion of EAs with fertilizer shortage is larger in all 3 categories of Tigray and in average and AGP EAs of SNNP relative to their national counterparts.

Respondents in each EA were asked to name the 3 most important criteria used to allocate fertilizer among farmers that wanted to use the input. In the largest proportion of EAs (48.5 percent) the ability to pay cash is the most important criterion. In 20 percent of the EAs there are no priority groups or no criterion was used. Out of the 6 specific criterion listed the ability to use credit is third in importance, used in 16.5 percent of the EAs. The category of others, which totaled 17 percent, includes 9.2 percent of the EAs in which the most important criterion used to allocate fertilizer is the ability to pay the highest price. Included also in the "others" category is the 4.6 percent of EAs where being approved by a development agent is the most important criterion and the 3 percent of the EAs where being knowledgeable about fertilizer is the most important criterion. Among EAs that provided a second criterion the largest proportion of about 37 percent the ability to use credit is the most important criterion followed by the ability to pay cash, which is used in 31 percent of the EAs. The criterion of approval by a development agent and being knowledgeable about fertilizer are third and fourth important and are used in about 15 and 10 percent of the EAs, respectively. Approval by a development agent, being knowledgeable about fertilizer, and ability to buy on credit are first to third important in EAs that provided 3 criteria.

There are differences in the first most important criterion by AGP classification as well as among regions. Relative to the criterion in the national average the category of "others" is more important than no priority group in AGP EAs while the use of credit is more important than "others" in non-AGP EAs. Taken together, the pattern in average, AGP, and non-AGP EAs of Tigray is the most dissimilar when compared with that observed nationally while that in Oromiya is most similar.

Annex Table C.1.8. Availability, sufficiency, and criteria for allocation of fertilizer and improved seeds, by region and AGP status

Region	Category	Fertilizer available in time for Meher (%)	Sufficient fertilizer available (%)	Fertilizer allocated to those satisfying the criterion				Improved seeds available in time for Meher (%)	Sufficient improved seeds available (%)	Improved seeds allocated to those satisfying the criterion				
				Pay cash	Use credit	No priority groups	Others			Pay the highest	Pay cash	Use credit	No priority groups	Others
National	All woredas	77.3	87.8	48.5	14.6	20.0	16.9	54.7	77.2	16.1	40.7	13.6	17.8	11.9
	AGP woredas	76.6	83.9	42.7	17.1	18.3	22.0	56.9	72.3	15.7	42.2	13.3	16.9	12.0
	Non-AGP woredas	78.6	95.1	58.3	10.4	22.9	8.3	50.5	88.0	17.1	37.1	14.3	20.0	11.4
Tigray	All woredas	81.4	79.2	10.3	27.6	51.7	10.3	66.1	72.5	4.2	8.3	29.2	45.8	12.5
	AGP woredas	75.0	73.3	4.5	36.4	45.5	13.6	70.0	62.1	4.8	4.8	33.3	42.9	14.3
	Non-AGP woredas	94.7	88.9	28.6	0.0	71.4	0.0	57.9	100.0	0.0	33.3	0.0	66.7	0.0
Amhara	All woredas	72.5	93.0	61.5	7.7	15.4	15.4	45.0	64.7	19.0	42.9	4.8	19.0	14.3
	AGP woredas	77.4	92.5	46.7	6.7	26.7	20.0	49.1	61.5	18.8	43.8	0.0	25.0	12.5
	Non-AGP woredas	63.0	94.1	81.8	9.1	0.0	9.1	37.0	75.0	20.0	40.0	20.0	0.0	20.0
Oromiya	All woredas	75.3	91.8	76.7	0.0	10.0	13.3	49.4	77.5	12.5	62.5	3.1	9.4	12.5
	AGP woredas	75.9	87.8	84.2	0.0	0.0	15.8	55.6	76.7	17.4	69.6	0.0	4.3	8.7
	Non-AGP woredas	74.1	100.0	63.6	0.0	27.3	9.1	37.0	80.0	0.0	44.4	11.1	22.2	22.2
SNNP	All woredas	81.3	85.9	46.7	20.0	8.9	24.4	61.3	89.6	24.4	41.5	17.1	7.3	9.8
	AGP woredas	78.0	78.9	42.3	19.2	3.8	34.6	56.0	88.9	21.7	47.8	17.4	0.0	13.0
	Non-AGP woredas	86.7	96.2	52.6	21.1	15.8	10.5	70.0	90.5	27.8	33.3	16.7	16.7	5.6

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Out of the 300 EAs that provided a reply for the question whether or not improved seeds were available before Meher 55 percent (164) responded in the affirmative. Improved seeds are made available in larger proportion of AGP EAs. Availability of improved seeds is relatively better in all 3 categories of Tigray and in average and non-AGP EAs of SNNP. Among the EAs where improved seeds were made available before Meher it is sufficient in 77 percent with farmers in a significantly large proportion of non-AGP EAs able to obtain sufficient improved seeds. Although average and AGP EAs in Tigray fare worse relative to their national counterparts, sufficient improved seeds are made available in all non-AGP EAs of Tigray. EAs in all 3 categories of Amhara perform worse relative to their national counterparts while the reverse is true in SNNP. An average EA in Oromiya perform slightly better while AGP EAs perform better, both relative to their national counterparts. Respondents were asked to list the 3 important criteria that were used to allocate improved seeds. For the most part, the pattern in the importance of the criteria used to allocate improved seeds is similar with those used to allocate fertilizer.

Government extension or development agent offices are available in the respective PAs of 252 (83 percent) of the 304 EAs. Out of the 52 EAs with no extension office 25 and 8 are in AGP and non-AGP EAs of SNNP, 10 and 6 are in AGP and non-AGP EAs of Oromiya, 2 in AGP EAs of Tigray, and 1 in AGP EAs of Amhara. Distances travelled to the nearest extension office out of the PA average 12 km, range between 1 and 56 km, and farmers in 50 percent of the EAs with no extension office travel 7.5 km or more to such offices located out of the PA. The distances are longer in Oromiya and shorter in SNNP relative to the national averages.

In a large majority of 75.4 percent of the EAs extension service provisions have improved in the 2 years before the survey, were about the same in 16.3 percent, and deteriorated in 8.3 percent. The trend in the quality of extension service provision observed in the recent past in the aggregated sample holds true in all remaining subcategories.

Not only is there a large presence of extension offices observed but also the proportion of EAs with 3 or more development agents (DAs) is the largest at 71 percent and this includes 21, 9, 4 and 1 EA with 4, 5, 6, and 9 development agents. Moreover, the proportion of EAs with 2 DAs is the second largest at 26 percent. The pattern in the number of DAs observed in the aggregate sample also holds in all other subsamples.

Questions were asked about years of experience and specialization of three extension agents. The data indicates that in an average EA the first extension agent is relatively more experienced, which is why we used the data about the first development agent (DA) in Table C.1.9. The

largest proportion (90 percent) of the development agents have only 0-5 years of experience working in the PAs, about 9 percent serve in the PA for 5 to 10 years, and about 1 percent serve for longer than 10 years. Among the least experienced group of DAs only 5 percent have 0 years of experience, a largest proportion of 29 percent have at least one year of experience, followed by those who have 2, 3, 4, and 5 years of experience at 28, 18, 13, and about 7 percent. The pattern in the number of years of experience observed in the aggregated sample also holds in all other subsamples with the exception in non-AGP EAs of Oromiya and AGP EAs of SNNP, which have no DAs with 5-10 years of experience.

In the largest proportion of EAs (41 percent) the first development agent was specialized in crops, followed by those specialized in non-agricultural income generation activities at 31 percent and in livestock at 25.4 percent. The proportion specialized in crops is largest in all subcategories with the exception of non-AGP EAs in SNNP in which the proportion of development agents specialized in non-agricultural income generation activities is the largest followed by those trained in livestock. While EAs in Tigray and Amhara are mostly similar with the aggregated sample, in Oromiya the proportion of development agents trained in livestock is larger than those trained in non-agricultural income generation activities.

Annex Table C.1.9. Access to and quality of extension services, by region and AGP status

Region	Category	Proportion with extension office in PA (%)	Dist. to nearest extension office out of PA (km)		Access to extension services in the last 2 years (proportion %)			Number of development agents in extension office			Years of experience development agent 1 in PA (proportion in %)			Specialty of development agent 1 (proportion in %)			
			Mean	SD	Improved	Was same	Deteriorated	1	2	3 or more	0 to 5	6 to 10	10 or more	Crops	Livestock	Non-agri. income gen. activ.	Others
National	All woredas	82.9	12.1	12.8	75.4	16.3	8.3	2.8	26.2	71.0	90.1	9.1	0.8	40.9	25.4	31.0	2.8
	AGP woredas	81.0	13.3	14.4	75.3	15.4	9.3	1.2	26.5	72.2	90.1	9.3	0.6	44.4	22.8	29.6	3.1
	Non-AGP woredas	86.5	8.8	7.0	75.6	17.8	6.7	5.6	25.6	68.9	90.0	8.9	1.1	34.4	30.0	33.3	2.2
Tigray	All woredas	96.8	8.0	2.8	78.3	16.7	5.0	1.7	6.7	91.7	81.7	18.3	0.0	46.7	25.0	28.3	0.0
	AGP woredas	95.2	8.0	2.8	75.0	17.5	7.5	0.0	5.0	95.0	80.0	20.0	0.0	47.5	25.0	27.5	0.0
	Non-AGP woredas	100.0	0.0	0.0	85.0	15.0	0.0	5.0	10.0	85.0	85.0	15.0	0.0	45.0	25.0	30.0	0.0
Amhara	All woredas	98.8	4.0	0.0	65.8	19.0	15.2	5.1	34.2	60.8	88.6	11.4	0.0	40.5	19.0	35.4	5.1
	AGP woredas	98.1	4.0	0.0	67.3	19.2	13.5	1.9	32.7	65.4	90.4	9.6	0.0	42.3	13.5	38.5	5.8
	Non-AGP woredas	100.0	0.0	0.0	63.0	18.5	18.5	11.1	37.0	51.9	85.2	14.8	0.0	37.0	29.6	29.6	3.7
Oromiya	All woredas	80.2	18.0	15.0	70.8	20.0	9.2	3.1	36.9	60.0	95.4	3.1	1.5	38.5	30.8	26.2	4.6
	AGP woredas	81.5	23.9	16.5	72.7	15.9	11.4	2.3	36.4	61.4	95.5	4.5	0.0	40.9	29.5	25.0	4.5
	Non-AGP woredas	77.8	10.2	8.6	66.7	28.6	4.8	4.8	38.1	57.1	95.2	0.0	4.8	33.3	33.3	28.6	4.8
SNNP	All woredas	59.3	9.2	11.1	93.8	6.3	0.0	0.0	22.9	77.1	95.8	2.1	2.1	37.5	29.2	33.3	0.0
	AGP woredas	51.0	9.8	12.4	96.2	3.8	0.0	0.0	30.8	69.2	96.2	0.0	3.8	50.0	26.9	23.1	0.0
	Non-AGP woredas	73.3	7.2	4.9	90.9	9.1	0.0	0.0	13.6	86.4	95.5	4.5	0.0	22.7	31.8	45.5	0.0

Source: Authors' calculations using data from the AGP Baseline Survey, 2011.

Financial Cooperatives, Farmers' Associations, and Micro-Finance Institutions

The community survey included questions about availability of credit and savings cooperatives, credit and loans cooperatives, peasant associations, and small microfinance institutions. The questions include the number of such institutions in the PA, distances to the nearest outside the PA if unavailable, and services provided by such institutions. We summarize the data on each of the institutions in Tables C.1.10 through C.1.13.

In 40.5 percent of the EAs there is at least one saving and credit cooperative (SCC). Relative to their national counterparts EAs in all 3 categories of Tigray have better access to SCCs, particularly the proportion of average and non-AGP EAs where the access to SCCs is about twice as large. Non-AGP EAs in Oromiya are the only other category that performs better. A large majority of the EAs that have SCCs have only one such cooperative and this is true in all subcategories. In EAs where there are no saving and credit cooperatives in the PA the closest SCC is located at an average distance of 18 km. The distance is longer in an average EA of Tigray and Amhara while the reverse is true in Oromiya and SNNP.

A large proportion of the SCCs (52 percent) provide credit, followed closely by those who provide agricultural credit at 50.4 percent, while 48.4 percent of the SCCs sold improved/hybrid seeds. Relative to their national counterparts a larger proportion of saving and credit cooperatives in Tigray and Amhara provide all 3 services while the reverse holds true in Oromiya and SNNP. In most, 96 percent, of the EAs there are restrictions on membership and that ranges from 80 percent in non-AGP EAs of Oromiya to 100 percent in all 3 categories of Tigray, and non-AGP EAs of Amhara and SNNP.

Annex Table C.1.10. Distribution of saving and credit cooperatives (SCCs) and services they provided, by region and AGP status.

Region	Category	Proportion with SCCs in PA (%)	Number of SCCs in PA (%)		Distance to the nearest SCC out of PA (km)		Services provided by the SCCs before the recent Meher season (%)			Proportion with restrictions to be a member (%)
			1	2 or more	Mean	SD	Sold fertilizer	Sold improved/ hybrid seeds	Provided agricultural credit	
National	All woredas	40.5	78.0	22.0	18.0	15.9	52.0	48.4	50.4	95.9
	AGP woredas	43.0	79.1	20.9	19.8	18.2	52.3	49.4	54.7	96.5
	Non-AGP woredas	35.6	75.7	24.3	14.8	9.8	51.4	45.9	40.5	94.6
Tigray	All woredas	80.6	76.0	24.0	25.6	36.0	74.0	68.0	74.0	100
	AGP woredas	78.6	78.8	21.2	29.3	37.9	72.7	63.6	75.8	100
	Non-AGP woredas	85.0	70.6	29.4	3.0	0.0	76.5	76.5	70.6	100
Amhara	All woredas	30.0	91.7	8.3	22.3	15.8	66.7	62.5	62.5	95.8
	AGP woredas	37.7	90.0	10.0	23.4	19.3	65.0	65.0	65.0	95.0
	Non-AGP woredas	14.8	100.0	0.0	20.9	10.0	75.0	50.0	50.0	100
Oromiya	All woredas	34.6	67.9	32.1	16.9	11.7	25.0	21.4	28.6	89.3
	AGP woredas	33.3	66.7	33.3	17.5	13.2	33.3	27.8	38.9	94.4
	Non-AGP woredas	37.0	70.0	30.0	15.7	8.6	10.0	10.0	10.0	80.0
SNNP	All woredas	25.9	81.0	19.0	14.8	13.5	19.0	20.0	9.5	95.2
	AGP woredas	29.4	80.0	20.0	17.5	15.1	13.3	21.4	13.3	93.3
	Non-AGP woredas	20.0	83.3	16.7	9.7	7.9	33.3	16.7	0.0	100

Source: Authors' calculations using data from the AGP Baseline Survey, 2011.

In 25 percent of the 304 EAs there is at least one saving and loan cooperative (SLC) with a relatively larger proportion of AGP EAs having access to SLCs. A larger proportion of EAs in all 3 categories of Tigray and in average and AGP EAs of SNNP have access to SLCs, relative to their national counterparts. A large majority of the EAs with SLCs have only one SLC with the exception of average and AGP EAs of Oromiya and non-AGP EAs of SNNP. Distances travelled to the nearest SLC out of the PA average 20 km, which is slightly longer in non-AGP EAs. Distances are longer in average and AGP EAs of Amhara and in average and non-AGP EAs of SNNP. Provision of agricultural credit is the most important function of SLCs in most subcategories, followed by selling hybrid/improved seeds, while selling fertilizer is the main service provided by SLCs in the smallest proportion of EAs.

Annex Table C.1.11. Distribution of savings and loan cooperatives (SLCs) and services they provided, by region and AGP status.

Region	Woreda	Proportion with SLCs in PA (%)	Number of SLCs in PA (%)		Dist. to the nearest SLC out of PA (KMs)		Services provided by the SLCs before the recent Meher season (%)			Proportion with restrictions to be a member (%)
			1	2 or more	Mean	SD	Sold fertilizer	Sold improved /hybrid seeds	Provided agricultural credit	
National	All woredas	25.3	59.7	40.3	20.0	21.6	22.1	25.0	42.9	93.5
	AGP woredas	28.5	57.9	42.1	18.4	15.9	26.3	28.6	47.4	96.5
	Non-AGP woredas	19.2	65.0	35.0	23.3	29.8	10.0	15.0	30.0	85.0
Tigray	All woredas	45.2	75.0	25.0	17.1	15.9	39.3	42.9	75.0	96.4
	AGP woredas	47.6	75.0	25.0	18.1	16.0	45.0	45.0	80.0	100
	Non-AGP woredas	40.0	75.0	25.0	15.1	16.9	25.0	37.5	62.5	87.5
Amhara	All woredas	17.5	57.1	42.9	22.3	19.2	21.4	28.6	57.1	100
	AGP woredas	22.6	58.3	41.7	22.9	20.0	25.0	33.3	58.3	100
	Non-AGP woredas	7.4	50.0	50.0	21.3	18.3	0.0	0.0	50.0	100
Oromiya	All woredas	17.3	35.7	64.3	17.0	13.0	14.3	7.7	14.3	100
	AGP woredas	16.7	11.1	88.9	16.7	13.5	22.2	12.5	22.2	100
	Non-AGP woredas	18.5	80.0	20.0	17.6	12.6	0.0	0.0	0.0	100
SNNP	All woredas	25.9	57.1	42.9	22.5	31.8	4.8	9.5	9.5	81.0
	AGP woredas	31.4	62.5	37.5	16.0	13.4	6.3	12.5	12.5	87.5
	Non-AGP woredas	16.7	40.0	60.0	38.4	53.6	0.0	0.0	0.0	60.0

Source: Authors' calculations using data from the AGP Baseline Survey 2011.

Producer associations operate in 24.4 percent of the EAs with the proportion slightly larger in non-AGP EAs. With the exception of non-AGP EAs of Amhara both Tigray and Amhara have relatively larger proportion of EAs with producer associations. All 3 categories of EAs in Oromiya and SNNP have smaller proportion of producer associations. In a large majority of the EAs there is a single operational producer association. In the EAs where there are no producer associations the closest outside the PA is about 19 km away, with a slightly longer distance in non-AGP EAs. About 64 percent of the producer associations sell fertilizers and 61 percent sell improved or hybrid seeds. Technical assistance on crop production, assistance in crop marketing, and provision of credits are the next three important functions of producer associations. This general pattern broadly holds in the rest of the subsamples.

Annex Table C.1.12. Distribution of producers associations (PAs) and services they provided, by region and AGP status.

Region	Woreda	Proportion with PAs in PA (%)	Number of PAs in PA (%)		Dist. to the nearest PA (km)	Services provided by the PAs before the recent Meher season (%)					Proportion with restrictions to be a member (%)
			1	2 or more		Sold fertilizer	Sold improved /hybrid seeds	Provided agricultural credit	Provided technical advice on crop production	Provided assistance in marketing of crops	
National	All woredas	24.4	82.9	17.1	18.7	63.5	60.8	37.8	54.1	45.9	94.6
	AGP woredas	22.0	87.8	12.2	17.2	59.1	56.8	45.5	45.5	52.3	93.2
	Non-AGP woredas	29.1	75.9	24.1	21.7	70.0	66.7	26.7	66.7	36.7	96.7
Tigray	All woredas	41.9	76.0	24.0	15.4	53.8	53.8	38.5	46.2	46.2	92.3
	AGP woredas	33.3	76.9	23.1	14.6	35.7	28.6	21.4	28.6	50.0	85.7
	Non-AGP woredas	60.0	75.0	25.0	17.2	75.0	83.3	58.3	66.7	41.7	100
Amhara	All woredas	32.5	95.8	4.2	21.4	84.6	84.6	53.8	57.7	57.7	100
	AGP woredas	35.8	100.0	0.0	20.7	84.2	89.5	73.7	52.6	57.9	100
	Non-AGP woredas	25.9	83.3	16.7	22.2	85.7	71.4	0.0	71.4	57.1	100
Oromiya	All woredas	16.0	75.0	25.0	17.0	53.8	53.8	23.1	61.5	30.8	92.3
	AGP woredas	13.0	83.3	16.7	17.1	57.1	57.1	28.6	57.1	42.9	85.7
	Non-AGP woredas	22.2	66.7	33.3	16.8	50.0	50.0	16.7	66.7	16.7	100
SNNP	All woredas	11.3	77.8	22.2	19.5	44.4	22.2	11.1	55.6	33.3	88.9
	AGP woredas	7.8	75.0	25.0	15.9	25.0	0.0	25.0	50.0	50.0	100
	Non-AGP woredas	17.2	80.0	20.0	30.9	60.0	40.0	0.0	60.0	20.0	80.0

Source: Authors' calculations using data from the AGP Baseline Survey, 2011.

In only 6.3 percent of the 304 EAs do small money and financial institutions (MFIs) operate with a slightly higher proportion in AGP EAs. Proportionately more MFIs operate in Tigray and SNNP and the reverse is true in Amhara and Oromiya, particularly there are no MFIs in non-AGP EAs of Oromiya. Nationally, more than one MFI operate in a large majority of the EAs. This is mainly influenced by SNNP, in which all EAs have 2 or more MFIs.

Residents of the 285 EAs where there are no MFIs travel about 19 km to the nearest MFI outside the PA. The distance ranges from 11.2 km for an average resident of SNNP to 16.5 km in Amhara. Where available, MFIs mostly provide timely credit. Credit is provided by MFIs in about 59 percent of the EAs surveyed. With the exception of SNNP in which MFIs provide credit in only a quarter of the EAs a minimum of two-thirds of the MFIs provide credit in all others where they operated.

Annex Table C.1.13. Distribution of banks and small microfinance institutions (MFIs) and services provided by MFIs, by region and AGP status

Region	Woreda	Proportion with MFIs in PA (%)	Number of MFIs in PA (%)		Distance to the nearest MFI out of PA (km)		Proportion in which MFIs provided credit before the most recent Meher season (%)
			1	2 or more	Mean	SD	
National	**All woredas**	6.3	47.4	52.6	18.9	14.7	58.8
	AGP woredas	6.5	46.2	53.8	18.8	14.6	61.5
	Non-AGP woredas	5.8	50.0	50.0	19.0	14.9	50.0
Tigray	**All woredas**	11.3	71.4	28.6	17.5	12.6	71.4
	AGP woredas	9.5	50.0	50.0	19.0	14.0	75.0
	Non-AGP woredas	15.0	100.0	0.0	14.2	8.3	66.7
Amhara	**All woredas**	3.8	66.7	33.3	22.2	16.5	66.7
	AGP woredas	3.8	100.0	0.0	22.4	18.1	100.0
	Non-AGP woredas	3.7	0.0	100.0	21.8	13.6	0.0
Oromiya	**All woredas**	3.8	66.7	33.3	21.5	16.0	66.7
	AGP woredas	5.7	66.7	33.3	19.0	13.2	66.7
	Non-AGP woredas	0.0	_	_	25.9	19.5	-
SNNP	**All woredas**	7.4	0.0	100.0	14.0	11.2	25.0
	AGP woredas	7.8	0.0	100.0	15.0	11.7	25.0
	Non-AGP woredas	6.7	0.0	100.0	12.2	10.2	-

Source: Authors' calculations using data from the AGP Baseline Survey, 2011.