



**CGIAR Research Program
Climate Change, Agriculture and Food Security (CCAFS)**

Summary of Household Baseline Survey Results:
Tougou, Burkina Faso



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L. Somé, K. Sissoko, R. Zougmore, B. Traoré, M. Amadou, A.S. Moussa,
W. Forch, C. Garlick, S. Ochieng, P. Kristjanson, P.K. Thornton



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CCAFS Coordinating Unit - Department of Agriculture and Ecology, Faculty of Life Sciences, University of Copenhagen, Rolighedsvej 21, DK-1958 Frederiksberg C, Denmark. Tel: +45 35331046; Email: ccaafs@life.ku.dk

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Country team

Dr Léopold Somé - Country team leader

WEREME/N’DIAYE Aïssata – Supervisor

SOME M. Bernadette - Supervisor

OUERMI W. S. Oualyou – Surveyor

KPODA Cyrille – Surveyor

SOME Jean – Surveyor

ZARE Yacouba – Surveyor

SOME Eric – Surveyor

WEREME Abdul Aziz – Surveyor

Summary

This report presents the results of household baseline survey carried out in 7 villages of the Tougou site (Burkina Faso) in January 2011, within the framework of the CGIAR research program on Climate Change, Agriculture and Food Security (CCAFS). The objective of the survey was to gather baseline information at the household-level about some basic indicators of welfare, information sources, livelihood/agriculture/natural resource management strategies, needs and uses of climate and agricultural-related information and current risk management, mitigation and adaptation practices. Subsistence agriculture and extensive livestock (cattle and small ruminants) production are the main economic activities, and livelihood sources for the majority of the households. The vast majority of households are men-headed. Household members of working age represent 74% of the total population. Approx. 43% of the households reported a member with at least a primary education level. Agricultural production is diversified. Regarding land availability, approx. 56.1% of the households indicated land surface of 1-5 ha while 35% reported over 5 ha. Inputs use is very limited. Most of the on and off farm production is used for household own consumption. Regarding food security, only 9.3% of the households were food secure all the year, 16.5% food secure during 10 months and 74.1% less than 10 months. The main sources of income reported were business, employment on other farms and formal/informal loans/credit. The households reports several changes in their farming systems over the past ten years. The most dominant crop-related changes listed among other were adoption of new varieties, soil and water conservation techniques, irrigation. The reasons that drive these changes were market, climate changes, land, labor, diseases and projects. Livestock-related changes included the introduction of new breeds, herd management and animal feed. As for the crop changes, market, climate change, diseases/pest were the drivers of these changes in livestock management. Most of the households reported receiving some kind of weather/climate information, with focus on extreme events forecast, start of the rainy season forecast, next 2-3 days and 2-3 months forecast. Men were the most dominant recipients of the information which is however shared with other household members, friends, relatives and neighbors. Radio is the most listed source of weather/climate information. For half of the households surveyed, no member belongs to a community group. Soil improvement and agricultural productivity enhancement were the most listed community groups. In terms of assets/capital, approx. 48% of the households did not mentioned any asset, while 23.7% indicated 1-3 assets and no household mentioned more than 4 assets.

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1. Introduction

The CCAFS program is a strategic ten-year partnership between the CGIAR and the Earth System Science Partnership to help the developing world overcome the threats posed by a changing climate, to achieving food security, enhancing livelihoods and improving environmental management. It brings together the world’s best strategic research in the fields of agricultural science, development, climate science and earth systems science to identify and address the most important interactions, synergies and tradeoffs between climate change, agriculture and food security. As a collective effort, the CCAFS program aims to become a hub that facilitates action across multiple CGIAR centers and research programs, as well as involving farmers, policy makers, donors and other stakeholders. Their knowledge and needs will be integrated into the tools and approaches that the CCAFS’ program develops.

This report presents the results of the household baseline survey conducted in January 2011 in seven villages of the Tougou site (Burkina Faso) (Figure 1). The objective of the survey was to gather baseline information at the household level about some basic indicators of welfare, information sources, livelihood/agriculture/natural resource management strategies, needs and uses of climate and agriculture-related information and current risks management, mitigation and adaptation practices. The questionnaire and training materials associated with it, including data entry and management guidelines can be found at <http://ccafs.cgiar.org>

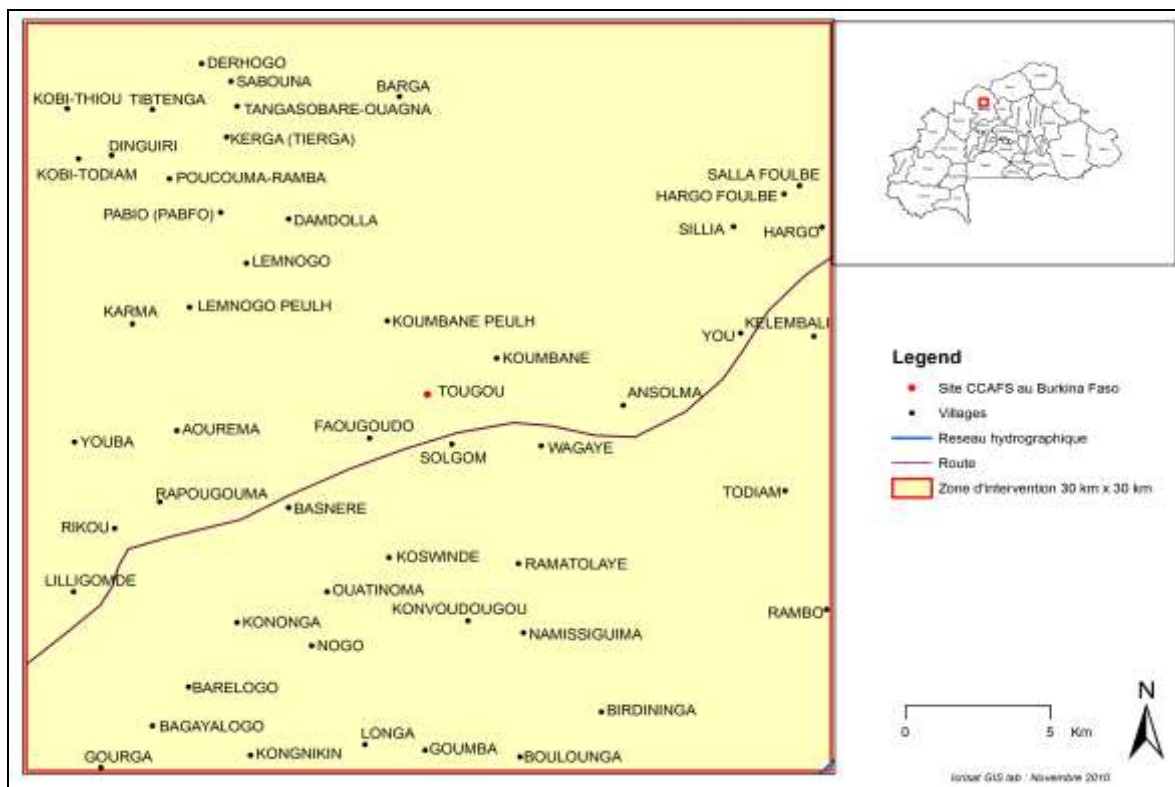


Figure 1. Location of the Tougou site

The questionnaire was structured around the following key sections:

1. Household respondent and type
2. Demography
3. Sources of livelihood

4. Crop, farm animals/fish, tree, soil, land and water management changes
5. Food security
6. Land and water
7. Inputs and credits
8. Climate and weather information
9. Community groups
10. Assets

2. Household respondent and type

2.1. Household respondent

Of the 140 households surveyed, about 91% of respondents were men, and only 9% of women. Men (married, single, divorced or widowed) household heads dominate (93.6%), while women head of household accounted for only 5%.

2.2. Types of household

The overall household sample size was 1611 individuals. The average household size was 11+/- 8 members. Approx. 51% of the households reported more than 10 members, 44% reported 4-9 members and only 4% of the households had 3 members.

Table 1. Household size and proportion

Household size	Number of HH	%	Population	%
1 - 3	6	4	13	0.8
4 - 6	32	23	159	9.9
7 - 9	30	21	239	14.8
10 and more	72	51	1200	74.5

Figure 2 and 3 show respectively the proportion of household member of non-working age (younger than 5 and older than 60 years) and household members of working age (between 5 and 60 years). There are approx. 83% of the households where 40% of members are of non-working age <5yrs or >60yrs. Of the households surveyed 49% members of working age representing 60-80% of the household members. Members of working age represent 73.6% of the total sample population.

Table 2. Age group and population

Age group	Population	%
< 5 years	291	18.1
5 - 60 years	1185	73.6
> 60 years	135	8.4

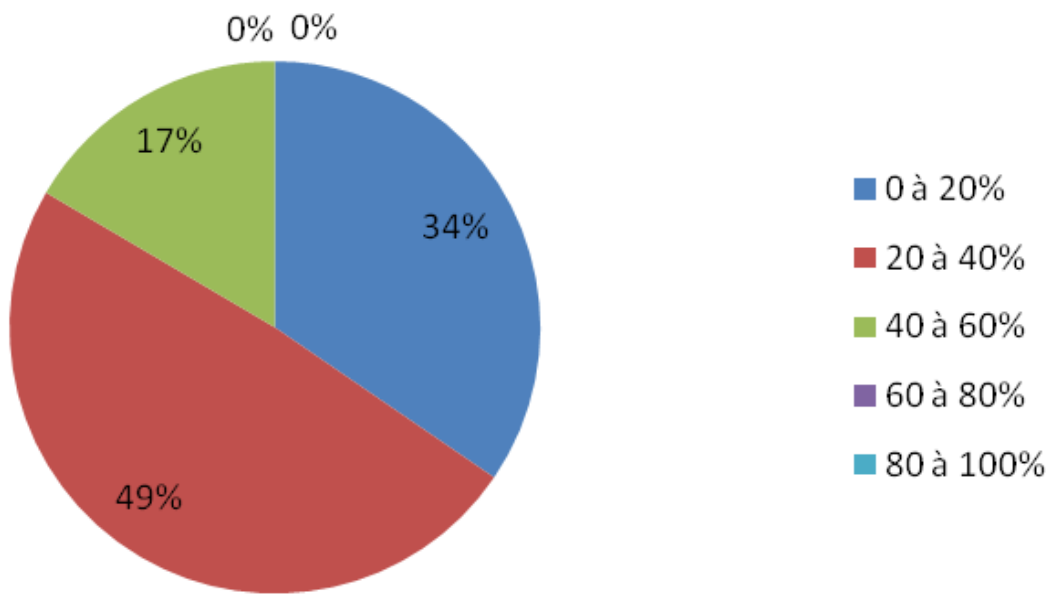


Figure 2. Percentage of people of non-working age

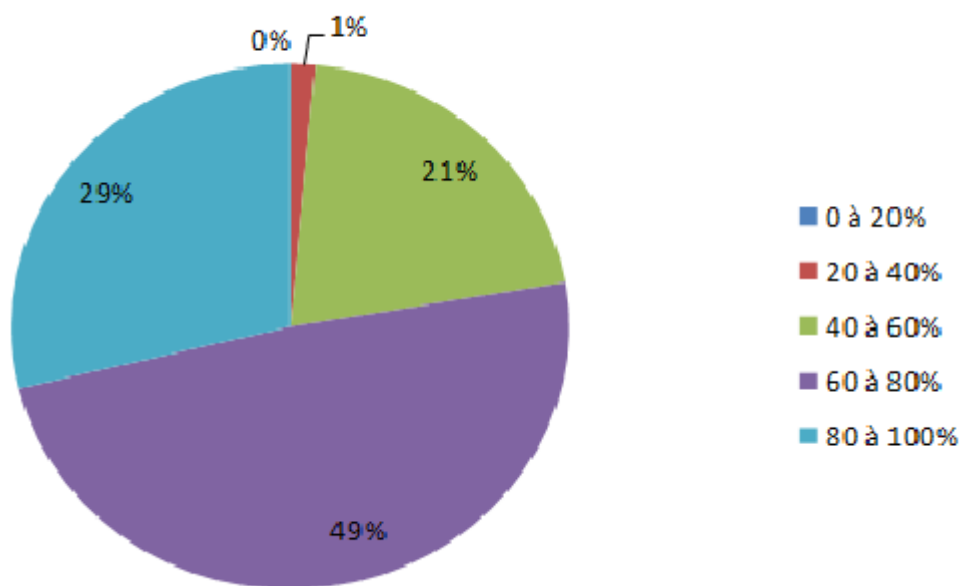


Figure 3. Percentage of people of working age

2.3. Education level

Table 3 provides information on the educational level of the households surveyed. Approx. 43% of the households reported a member with at primary education level and 25% a member with a secondary level.

Table 3. Education level

Level of education	% Household
No formal education	31
Primary	43
Secondary	25
Post-secondary	1

Table 4. Highest education level and household size

Level of education	Household 1-3 pers		Household 4-6 pers		Household 7-9 pers		Household 10 +	
	No	%	No	%	No	%	No	%
No formal education	6	100	13	40.6	11	36.7	14	19.4
Primary	0	0	16	50	14	46.7	30	41.7
Secondary	0	0	3	9.4	4	13.3	28	38.9
Post-secondary	0	0	0	0	1	3.3	0	0

3. Sources of livelihood

3.1. On-farm livelihood sources

The figure below highlights household's production, consumption and sale of agricultural products at the farm level. Subsistence agriculture remains the main economic activity. Major crops grown are millet, sorghum, and maize. Agricultural production is diversified with approximately 82% of households cultivating 7-9 crops and 13.6% producing 4-6 crops.

Table 5. Agricultural production diversification

Number of products	Number of households	% of households
None	1	0.7
1 product	0	0.0
2 - 3 products	2	1.4
4 - 6 products	19	13.6
7 - 9 products	115	82.1
10 and more	3	2.1

Of the households surveyed 11.4% indicated producing cash crops, 42.1% involved in fruits production. Livestock production is reported as an important economic activity (70.7% of the households reported rearing large livestock and 90% involved in small ruminants rearing). Manure and compost are derived from livestock production.

On the consumption pattern, most of the households indicated that cereals constitute the major staple food. Livestock products contribute also to food security and livelihood in general. Fruits and legumes are also consumed at household level.

Regarding the sales, approx. 86.4% and 53% of the households surveyed reported respectively selling large and small livestock. Part of the legumes and cereals produced are also sold.

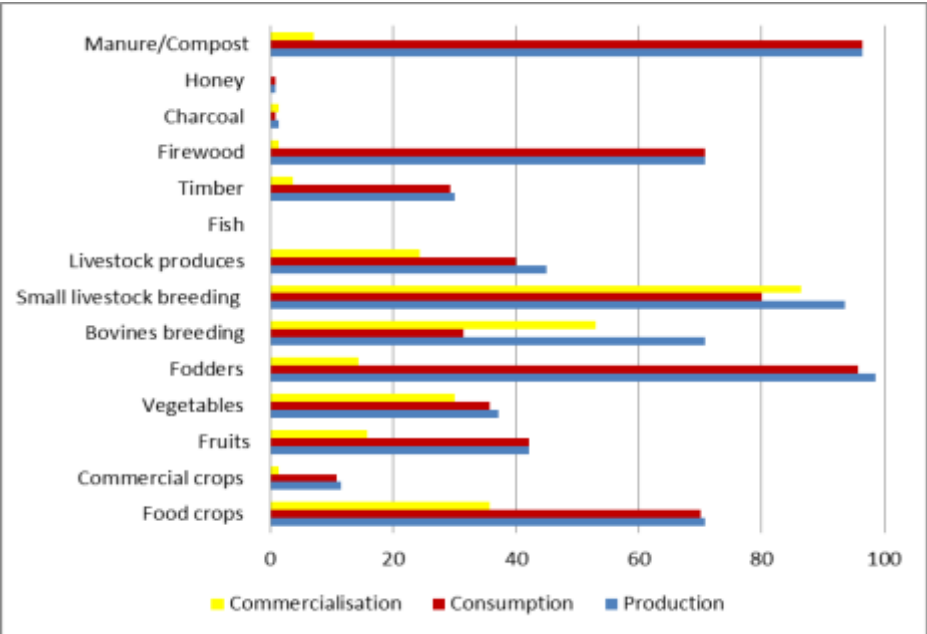


Figure 4. Percentage of households producing, consuming and selling of various agricultural products from their own farm

3.2. Off-farm livelihood sources

Many households reported consuming and selling off-farm products. Approximately 57% of households reported consuming off-farm cereals and fruits bought on the market. About 81% of the households reported collecting fuel wood. It appears that only few households reported selling food crops.

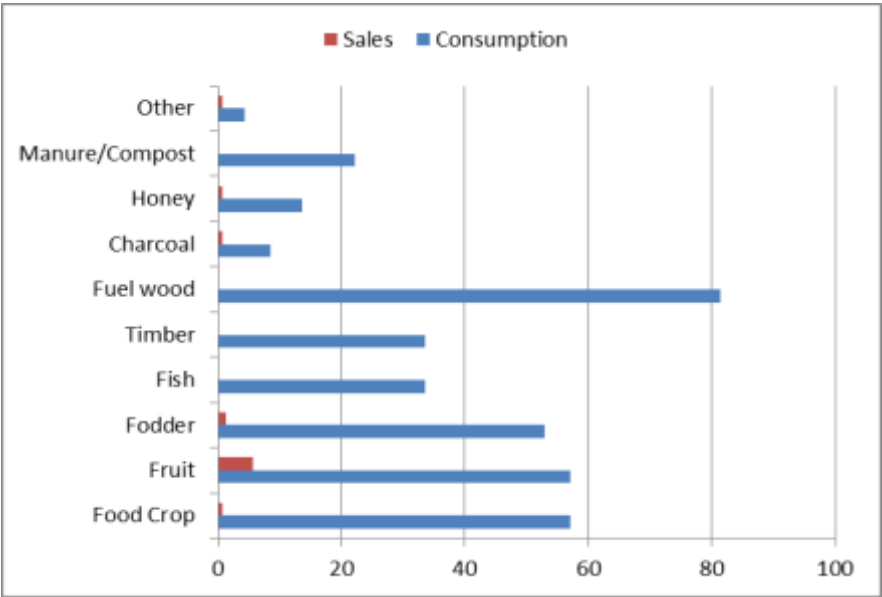


Figure 5. Percentage of households producing, consuming and selling of various off-farm agricultural products

3.3. Diversification indices

A production diversification index was created by adding up the total number of agricultural products produced on-farm:

1=1-4 products (low production diversification)

2=5-8 products (intermediate production diversification)

3=more than 8 products (high production diversification)

Regarding the selling/commercialization, the total numbers of agricultural products produced on their own farms, with some of the products sold were added up:

0=no products sold (no commercialization)

1=1-2 products sold (low commercialization)

2=3-5 products sold (intermediate commercialization)

3=more than 5 products sold (high commercialization)

The results of these diversification indices are shown in Table 6. About 68.6% of the household surveyed have an intermediate production diversification index, while 29.3% of households have a high production diversification index. On the commercialization, 57.3% of the households have an intermediate commercialization diversification index, while 37.1% have a low commercialization diversification index.

Table 6. Diversification indices

Production diversification	% of households
1 product	2.1
2 or 3 products	68.6
4 or 6 products	29.3
Selling/commercialization	
No product	3.6
1-2 products	37.1
2-3 products sold	57.3
4-6 products sold	2.1

3.4. Farm labor: who does most of the work on and off-farm

Figures below show the distribution of tasks (work) within and outside the farm. Approx. 50% of the on-farm workload is shared by all members of household. Additionally, 35% of the households reported that men are responsible of on-farm workload, while the same households reported that women bear only 8% of the on-farm workload. Off-farm men bear 42% of the workload, and women 18%.

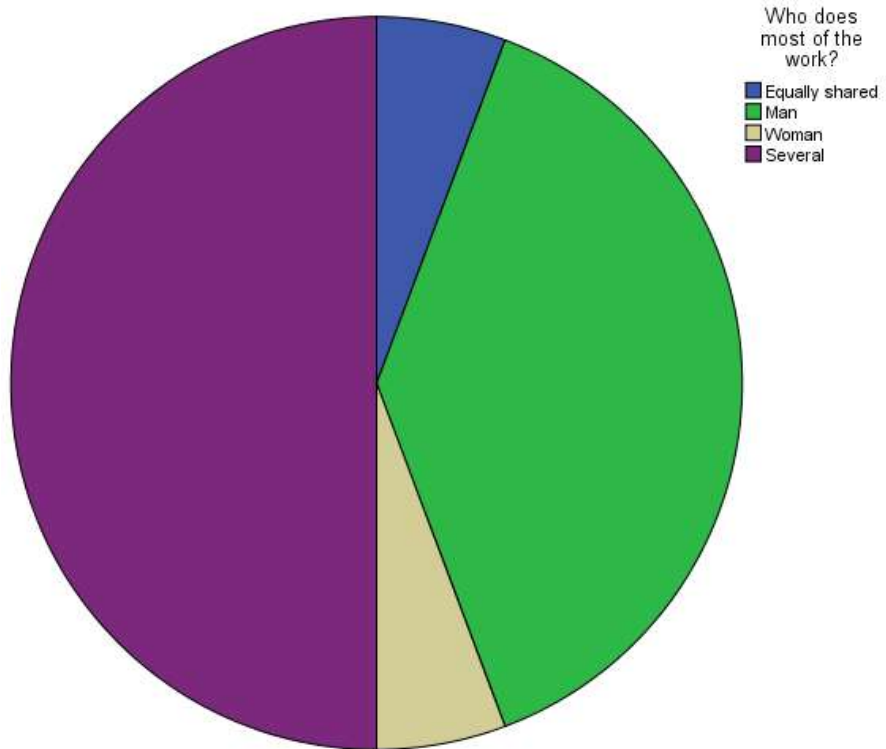


Figure 6. On-farm workload

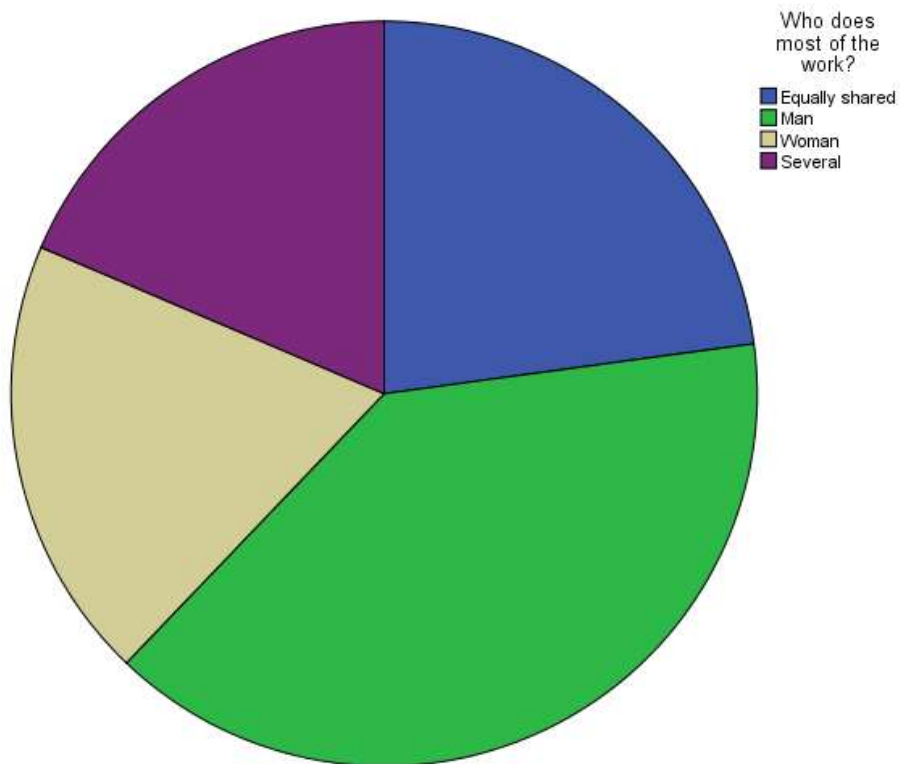


Figure 7. Off-farm workload

3.5. Sources of cash incomes

The tables below show household's number of and income sources. Approx. 15.7% of the households reported no income source while 70% indicated several incomes sources. On the sources, it was reported that loan/credit (formal and informal), business, remittances and employment on other peoples' farms are the main cash income sources (Table 8).

Table 7. Number of income sources

	Number of household that reported these sources	% of households
None	22	15.7
1 source	40	28.6
2 sources	34	24.3
3 sources	24	17.1
4 sources	12	8.6
5 sources	5	3.6
6 sources	3	2.1
Total	140	100.0

Table 8. Sources of cash incomes

Sources of cash incomes	% of households
Employment on someone else's farm	24.3
Other employment	10.7
Business	40
Remittances or gifts	28.6
Payment for environmental services	2.1
Payment from projects/Government	18.6
Loan/Credit from formal source	11.4
Loan/Credit from informal source	37.1
Renting out farm machinery	14.3
Renting out your own land	6.4
No other source of cash	15.7

4. Crop, farm animals/fish, tree, soil land and water management changes

4.1. Crop-related changes

Approximately 97.19% of households reported changes made in their farming system, while only 2.9% have not reported any changes over the past decade. Changes made include:

- Adoption of new varieties: about 20.7% of households did not adopt any new varieties, while 30% and 49.3% respectively reported having adopted and/or introduced 1-2 and more than 3 new varieties on their farm.

Table 9. Adoption of new crops varieties during the past ten years

Changes of practices	% of households
No varieties introduced	20.7
1-2 new crops/varieties introduced	30
3 and more crops/varieties introduced	49.3

- Other changes reported include: crop rotation, early soil preparation, early crop installation, crop area expansion, reduced crop area, start of pesticides/herbicides utilization, integrated

crop and pest management, etc. It was reported that approx. 54.3% of the households surveyed have indicated more than 3 of these changes over the past ten years.

- Water management: the following changes have been reported:
 - Farm irrigation
 - Introduction of water harvesting and conservation technologies
 - Introduction of improved irrigation
 - Introduction of improved water drain

Regarding water management, it was noted that the vast majority of households (73.6%) have not adopted any of the above mentioned changes, while 22.9% reported at least one of the changes and 3.6% reported 2-3 of these changes.

- Regarding soil productivity management, more than 80% of the households reported at least two soil conservation and restoration adopted over the past ten years. The most common techniques are the “zaï”, stones bunds, contour line tillage, line planting, mineral and organic fertilizers use, manure and compost use.
- Agro-forestry practices: approximately 53% of households did not report any changes, while 47% reported some changes.

Reasons for crop-related changes

When prompted about the reasons of these changes, the households listed market, climate change, land, labor, insects, diseases and projects. Approx. 64.9% of households indicated the market as the main reasons of the changes they made in their farming system, whereas 80% reported climate change as the major cause. The table below highlights the main reasons and percentage of household that reported these reasons.

Table 10. Reasons for crop-related changes

Reasons for changes	% of households that have reported these reasons
Markets	64.9
Climate	79.9
Land	79.1
Labor	61.9
Diseases/pests	29.9
Projects	47.0

4.2. Livestock-related changes

Livestock production is a major economic activity. The table below shows changes operated in new breed’s introduction. Very few new breeds have been introduced in livestock system.

Table 11. Changes on animal breed

Changes	% of households
No animal	4.3
1 breed (same over the past ten years)	5
1 breed (different over the past ten years)	0.7
2-3 breeds with at least 1 being different over the past ten years	85
2-3 breeds with at least 2 being different over the past ten years	5

The table below gives livestock-related changes that were reported by the households surveyed.

Table 12. Livestock-related changes

<i>Changes in herd management</i>	<i>% of households</i>
None	70
1 – 2 changes	-
3 and more changes	3.6
<i>Changes in animal management</i>	
None	48.6
Change in 1 animal management	33.6
Changes in 2 or more animals management	26.4
<i>Adoption of new breeds</i>	
None	62.9
1-2 new breeds introduced	70
3 or more breeds introduced	-
<i>Feeding</i>	
None	3.6
Change in feeding of 1 animal	48.6
Change in feeding of 2 or more animals	33.6

Reasons of livestock-related changes

The reasons of the changes in livestock management are shown in the table below. Market, climate change and animal diseases outbreaks are the major causes/reasons listed by the households. Among the households surveyed, 87.1% reported market as the main cause of changes in livestock related changes (Table 13).

Table 13. Reasons of livestock-related changes

<i>Reasons</i>	<i>% of households</i>
Markets	87.1
Weather/climate	49.5
Labor	9.7
Pests/diseases	50.5

5. Food security

5.1. Food sources

The figures below provide information on the main food sources (on and off-farm) as well as the periods of abundance and shortage. On and off-farm production are the main sources of food at household level. Serious food shortage was reported during the months from May to October. Food security is a major concern as more than half (74.1%) of the households were food sufficient for a period less than 10 months through the year.

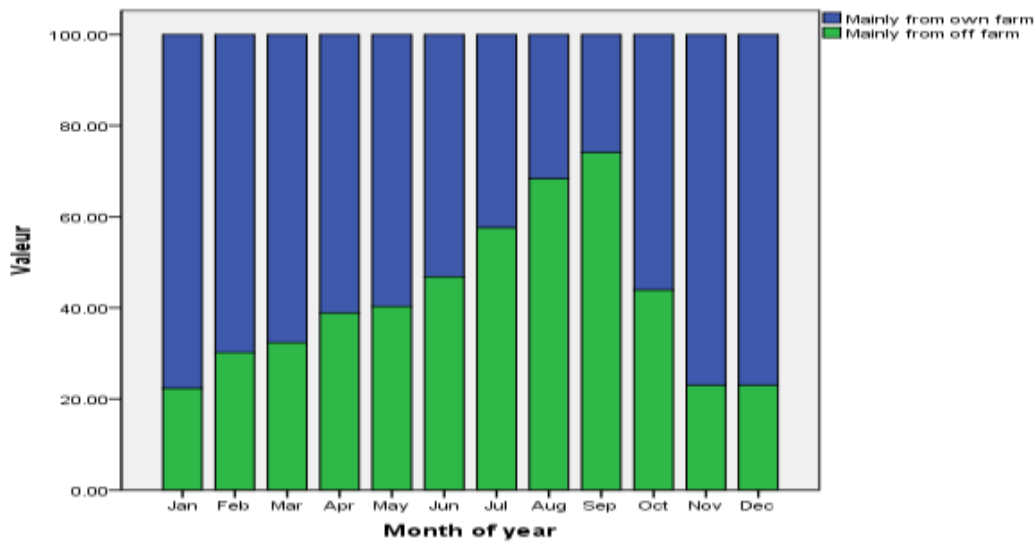


Figure 8. Household food main sources

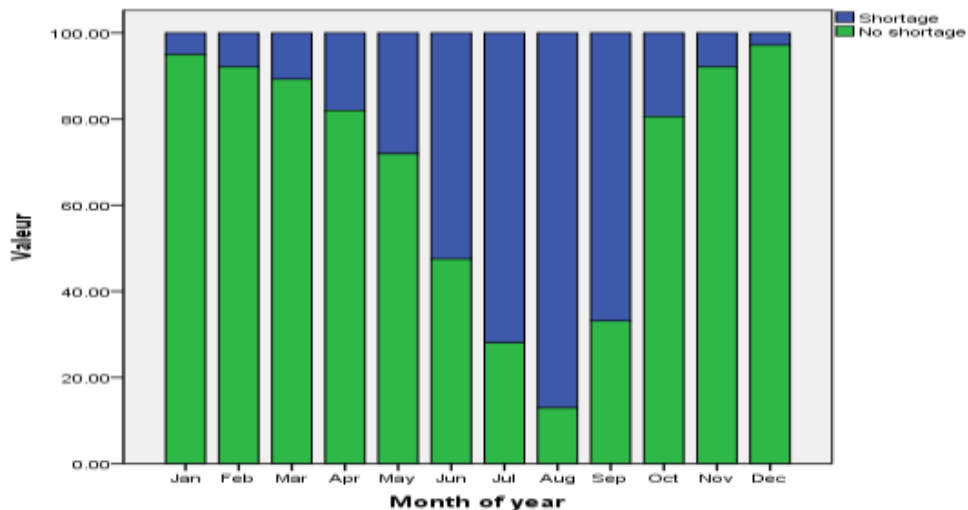


Figure 9. Household food shortage and no shortage periods

Food security Index

The food security index we created is based upon the number of months that the household has difficulty getting food from any source (i.e. from their own farm or off-farm, from stores, gifts, purchases or transfers). Table 14 below shows that half (51.1%) of households surveyed were able to meet their annual food needs, while 39% of the households are food secure during 10 months and 9.9% food secure for less than 10 months of the year

Table 14. Food security Index

Percentage of sampled households		
< 10 months food secure	10 months food secure	12 months food secure
74.1	16.5	9.3

6. Land and water

6.1. Water for agriculture

Table 15 shows the sources of water for agriculture (not for domestic purposes). It appears that about 57.9% of households do not use any of the following sources (irrigation, reservoirs, dams, wells and pumps). 34% of the households reported irrigation as a source of water for agricultural purposes. Most of the households rely on rainfall for agricultural water.

Table 15. Water sources for agriculture

Water Sources	% of household
Irrigation	34.3
Tanks for water harvesting	1.4
Dams or water ponds	15.7
Boreholes	29.3
Pumps	10.7
None of the above	57.9

6.2. Land use

The land available for each household includes both land that is owned by the household and land that is rented. Table 16 shows average land available per household. 12.3% of the households reported less than 1ha of land available, while 56.1% reported 1-5ha and 31.6% indicated more than 5ha. The vast majority of the households do not use communal land. Only 12.9% reported using these lands as grazing land for animal. Approx. 60% of the households indicated using man power for agricultural activities.

Table 16. Land available

	% of household
< 1ha	12.3
Between 1 and 5 hectares	56.1
More than 5 hectares	31.6

7. Inputs and credit

Table below shows that inputs use is very limited. The most dominant inputs used were fertilizers, pesticides, seeds and veterinary products. Approx. 33.6% of the households bought some veterinary products, while 27.6% bought some fertilizers and only 3% of households have received credit for agricultural activities. NPK is the most used fertilizer (52.6% of households reported using this fertilizer) and urea (45.1% of households).

Table 17. Purchase of inputs over the past 12 months

Type of purchased input	% of households
Seeds	20.3
Fertilizers	27.6
Pesticides	14.1
Veterinary medicine	33.6
Credit for agric. activities	3.0
None of the above	1.4

8. Climate and weather information

An analysis of which households are receiving any type of climate or weather-related information shows that approximately 56.4% of households reported receiving information on climate/weather, while 43.6% said no.

8.1. Who is receiving weather related information?

All households member receive weather/climate information. However, men are the primary recipients of climate and weather information.

8.2. Types of information

The main types of information received are forecasts of extreme events (droughts, floods), the start of the rainy season and the weather forecast (2-3 days and 2-3 months).

Table 18. Gender breakdown of different kinds of weather-related information

Type of information	% of HHs reporting that men are receiving the information	% of HHs reporting women are receiving the information
Extreme events	18.6	48.6
Pests & disease out break	12.9	17.9
Start of the rains	17.1	33.6
Weather for the next 2-3 months	10.7	17.1
Weather for the next 2-3 days	2.9	8.6

Forecast of extreme events

Extreme events reported were droughts, flooding, and diseases outbreaks. Of the households surveyed 62.3% reported that men received the information than the women (1.4%). 66.7% of the households that received the information indicated that some recommendations were also provided and that 80.4% of the households were able to use these recommendations. These recommendations allowed them to make changes on:

- Soil management (reported by 17.7% of the households)
- Crop varieties (19%)
- Soil water conservation (15.2%)
- Inputs use (11.4%)
- Crop types (8.9%)

Table 19. Extreme events information sources

	% of households
Radio	4.2
Television	0.6
Public services	2.8
NGOs and projects	0.6
Friends/relatives	37.2
Proper observations	9.4
Community group	0.6
Religious faith	1.1
Mobile phone	0.6

Forecast on diseases/pest outbreak

Approx. 20% of the households surveyed said that they have received some information on disease outbreak last year. Radio still remains for 35.9% of the households the main source of information. Own/personal observations were reported by 25% of the households, community/social group was indicated by 34.4% of the households. Men (reported by 35.7% of the households) were the primary recipients of the forecast than women. 85.7% of the households indicated that the forecast was provided with some recommendations and that 83.3% were able to use these recommendations. The following table highlights the measures/actions taken by the households. For instance 33.3% of the households have used this information to make changes in fertilizers use (seeds, fertilizers, pesticides) and 50% of households have made changes on agricultural calendar.

Table 20. Measures/actions taken following diseases outbreak information

Changes in agricultural practice	% of households
Crop varieties	25
Inputs use	20
Soil and water conservation	15
Crop types	10
Compost/manure and mulch use	7.5

Forecast of the start of the rains

35.7% of the households received information on the beginning of the rainy season last year. Radio was the primary provider for this kind of information for the households, while other households highlight friends and relatives as main source of information on the start of the rainy season.

Table 21. Source of information on the start of the rains

Source of information on start of the rains	% of households
Radio	50.6
Television	7.1
Extension services	8.2
NGOs and projects	1.2
Friends/relatives	27.1
Meteorological services	1.2
Newsletter	1.2
Local forecast/local knowledge	2.4
Own observations	1.2

For those who received this type of information, 77.6% said it included recommendations and 76.3% of these households said that they were able to use them to change land management, seeds use, compost/manure, inputs and crops.

Forecast for the next 2-3 next months

Approx. 17.9% of households stated that they received forecast information for the next 2-3 months. 40% of the men have received the information while only 4% of the women received it. On the forecast source, 92% of the households mentioned the radio, 44% mentioned friends/relatives and 24% indicated the extension services. Approx. 81.3% of the households have used the recommendations to changes some of their farming activities/practices.

Table 22. Aspects of farming changed with 2-3 month forecast information

Aspects of farming changed with 2-3 month forecast information	% of households
Manure/compost	19.4
Timing of farming activities	16.1
Land management	16.1
Inputs use	12.9
Crop varieties	6.5
Crop types	6.5

Forecast for next 2-3 days

Only 8.6% of the households surveyed reported receiving the forecast for the next 2-3 days. For 83.3% of the households, radio is the main source of information, while 25% mentioned television and 33.3% indicated friends, relatives and neighbors. Only 8.3% of the households reported some advises by the meteorological services. Approx. 83.3% of the respondents mentioned that the forecast was followed up with recommendations and that 90% were able to use these recommendations. The most common practices/changes upon receiving the forecast for the next 2-3 days listed by the respondents were the timing of agricultural/calendar activities (44.4% of the households reported that), land management (22.2%) and water management (11.1%).

9. Community groups

Respondents were asked if someone in the household was a member of an agricultural or natural resource management related group. Table below shows that few households (members) are affiliated to community groups. More than half of the households indicated that they don't have any member that belongs to the different groups mentioned in the questionnaire. The most dominant groups were soil improvement group (18.2% of the households mentioned this group), the agricultural improvement group (15.4%) and the vegetable production group (8.3%).

Table 23. Group membership

Group	% des ménages
Trees nursery	3.6
Aquaculture	0.0
Fishing	0.0
Collect forest products	1.6
Soil fertility improvement	18.2
Water management	3.6
Irrigation	5.9
Introduction/substitution of crops	4.0
Saving/Credit	3.6
Commercialization of agricultural products	7.1
Agricultural improvement	15.4
Seeds production	0.8
Vegetable production	8.3
None of the above mentioned	0.4
None	27.7

10. Climatic crises

Several climate crises have been reported over the last 5 years. 82.9% of the households indicated several climatic crises that they faced over the past years. Approx. 86.2% of them mentioned that they have not received any assistance, while 13.8% mentioned some assistance from friends, public/state structures and private associations.

11. Assets and capital

Households were asked about household assets they had, from a set list. The total number of assets in all categories was added up and the following asset indicator created:

0=no assets (basic level)

1=1-3 assets (intermediate level)

2=4 or more assets (high level)

About 48% of households mentioned no asset at all, 23.72% indicated 1-3 assets. The types of assets own by the households are presented in the table 30 below.

Table 24. Assets indicator

Number	% of households
None (basic)	48.14
1-3 assets (intermediate level)	23.72
4 and more (high level)	0