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

Summary of Baseline Household Survey results: Lawra-Jirapa, Ghana

Décembre 2011

J. B. Naab, K. Sissoko, R. Zougmoré, 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:ccafs@life.ku.dk

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Summary

This report summarizes the results of a baseline household-level survey carried out in 7 villages in the Lawra-Jirapa site (Ghana) in January 2011. The objective of this 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. Agriculture is the mainstay of livelihood in the area. Food crops and vegetables production is very important. Livestock rearing and production contributes also as important sources of livelihoods. Agricultural production is highly diversified with approx. 82% of the households surveyed producing between 7-9 crops. Most of the food produced on-farm and off-farm is consumed at household level. About 4% of the households are "food secure" over the whole year, the majority of households (70%) has access to food over 8-9 months and 26.4% of the households are food insecure almost half of the year. More than 97% of the households own more than 5ha of land, while 3% have between 1-5 ha. For those with more than 5ha, approx. 76% of these households used the land for agricultural purposes (crops). It shows that 91.4% of the households surveyed do not use any of the water sources listed in the table. Most make use of rainfall water for agricultural purposes. Very few (approx. 4%) of the households make use of dams and boreholes. Approx. 31% of the households reported using purchased inputs (fertilizers and pesticides). Employment on other farms and small business constitute the main sources of cash incomes. Remittances are also important. Several changes have been reported by the households in land use, crop and livestock management over the past decades. These changes were driving by many factors among which market prices, climate change, pest and diseases and project's influence. Most households surveyed (84%) reported having received some kind of climate and weather-related information. The most relevant information received are the forecast of extreme event, pest or disease outbreak, forecast of the start of the rains, and forecast for the next 2-3 months. Very often, the forecast is followed by advises which are used by some households to better improve land use, crop and livestock and natural resource management. Radio remains the main source of information on the different forecasts.

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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 2011 in seven villages (Kulkarni, Orbili, Jeffiri, Bompani, Tuori, Doggo and Baazu) of the Lawra-Jirapa CCAFS's site in Ghana (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.

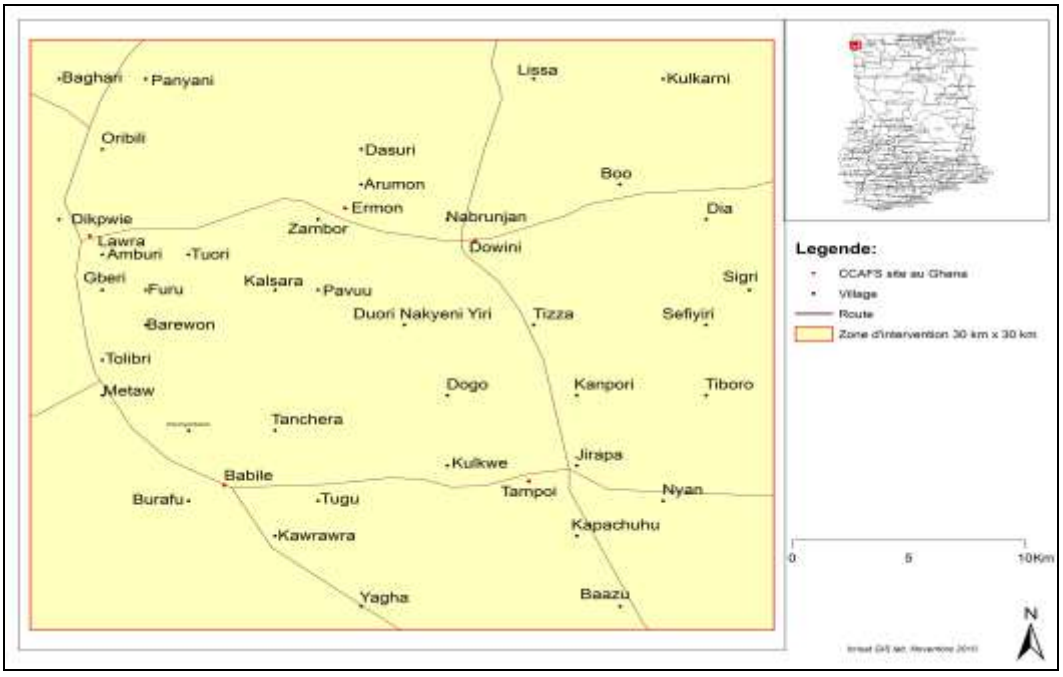

Figure 1. Location of the Lawra-Jirapa site

The questionnaire was structured around the following ten 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 repondent and type

2.1. Household respondent

A total of 140 households were interviewed during the survey. Approximately 92.1% of the households were man-headed. Of the sample surveyed 81% of the respondents were man and 19% were female. The dominant ethnic group was the Dagaabas (99% of the household surveyed).

2.2. Household type

Table 1 gives a summary of household size in the villages. Households with more than 10 members represent approx. 38% of the total households and small and medium size households (1-9 persons) represent 62%.

Table 1. Household size

Household size	Nb of households	% of the total household
1 to 3 pers.	6	4.3
4 to 6 pers.	39	27.9
7 to 9 pers.	42	30
10 and +	53	37.9

Table 2 provides a summary of household's age categories.

Table 2. % of households under different age categories

Age categories	Site of Lawra-Jirapa (Ghana)	
	Number	%
Under 5 years	182	15
5 to 60 years	919	75
Over 60 years	122	10

More than 75% of the household have members of age between 5-60 years.

Figure 2 shows the proportion of households of different age groups (< 5 years and > 60 years; and between 5-60 years). For approx. 0.7% of the households, more than 80% of the members are <5 years and > 60 years, opposed to 48.6% of the households with less than 20% of members of age < 5 years and > 60 years

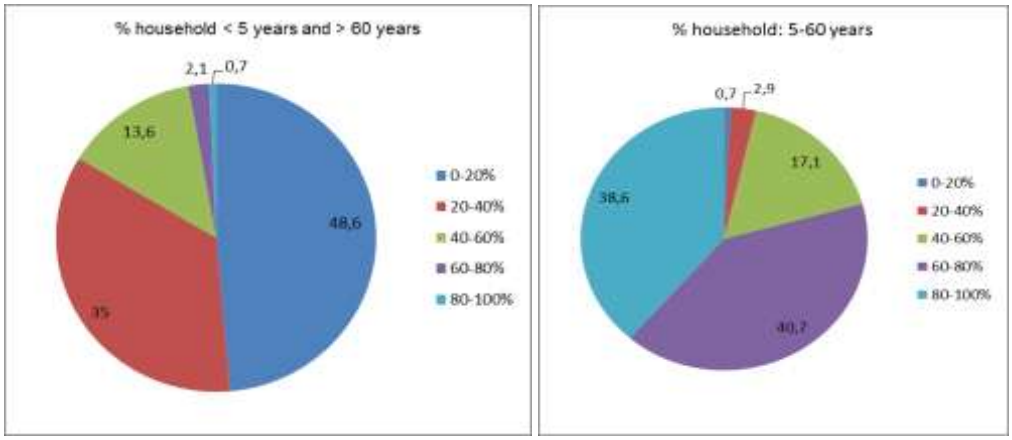

Figure 2. Proportion of the household from different age groups

2.3. Education level

Table 3 provides the levels of education at the site.

Table 3. Education levels at the Lawra-Jirapa site

	Households	
	number	%
No formal education	7	5.0
Primary	79	56.4
Secondary	47	33.6
Higher education	7	5.0
Total	140	100.0

The majority of the interviewed households (56.4%) have a member with at least a primary education level, 33% of households with at least a member with a secondary level and 5% of the households with no member with a formal education.

Table 4. Education level and household size

	Household 1-3 pers		Household 4-6 pers		Household 7-9 pers		Household 10 +	
	Nb	%	Nb	%	Nb	%	Nb	%
No formal education	1	14.3	3	42.9	3.0	42.9	0	0.0
Primary	4	5.1	25	31.6	21	26.6	29.0	36.7
Secondary	1	2.1	9	19.1	14.0	29.8	23	48.9
High education	0	0.0	2	28.6	4.0	57.1	1	14.3

3. Sources of livelihood

3.1. On-farm livelihood sources

All households produce, consume and sell crop grown on their farms. Approximately 98.6% of the households surveyed grow crops on their farms. Vegetables production is also important (97% of the households said they produce) and 90 % produce some fruits. Fodder production is also noted (21% of the households). Livestock rearing and production is also practiced by almost all the households (99% for small ruminants and 20.7% for large livestock). All these productions are important sources

of livelihoods. Table below provides information on production, consumption and selling at on-farm level.

Table 5. % of households producing, consuming and selling of various agricultural products from their own farm

Produces	% of HH producing	% of HH consuming	% of HH selling
Food crops	100	100	57.0
Commercial crops	15.0	13.6	6.7
Fruits	90.0	90.0	72.6
Vegetables	98.6	98.6	40
Fodders	20.7	20.7	3.7
Bovines breeding	20.7	7.9	14.1
Small livestock breeding	99.3	96.4	91.9
Livestock produces	75 .0	71.4	51.1
Fish	0.0	0.0	0.0
Timber	7.1	5.7	0.7
Firewood	72.1	72.1	43.0
Charcoal	35.0	31. 4	34.1
Honey	22.1	21.4	8.9
Manure/Compost	91.4	91.4	0.7

3.2. Off-farm livelihood sources

Table below presents off-farm sources of livelihood, regarding the production, consumption and selling of products.

Table 6. % of households producing, consuming and selling of various agricultural products from off-farm

Product	% of Household producing	% of Household consuming	% of Household selling
Food Crop	78.6	78.7	45.7
Fruit	86.4	69.8	89
Fodder	57.9	59.6	2.2..4
Fish	20.7	20.6	14
Timber	7.9	8.1	0
Fuel wood	90	92.6	72.4
Charcoal	2.1	30.1	36.2
Honey	36.4	36.8	19
Manure/Compost	11.4	11.8	0

3.3. Diversification indices

An agricultural diversification index was created by adding up the total number of agricultural/livestock products on-farm, where 1=1-4 products (low production diversification), 2=5-8 products (intermediate production diversification), and 3=more than 8 products (high production diversification).

On the selling/commercialization side, the total number of agricultural/livestock products produced on their own farms, with some of those products also sols, were added up, where: 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 the diversification indices are shown in Table 7. On the site of Lawra-Jirapa, agricultural production is highly diversified among farms. Results show that approx. 82% of the households surveyed produced between 7-9 crops.

Table 7. Diversification indices

Product diversification	% of households
1 product	0.0
2 or 3 products	1.4
4 or 6 products	8.6
7 or 9 products	82.1
10 products or more	7.9
Selling/commercialization	
No product	0
1-2 products	0
2-3 products sold	0.7
4-6 products sold	8.2
7-10 products sold	83
More than 10 products sold	8.1

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

Respondents were asked who does the majority of the work both on-farm and off-farm to produce the different agricultural products. All household members contribute to the workload at on-farm, but results indicated that both on-farm and off-farm women bear the majority of the workload (44.29% and 42.86% respectively on-farm and off-farm) of total agricultural tasks, as they are involved in production, consumption and selling also. Men also do bear some of the farm workload (33.5% on-farm and 10.71% off-farm.

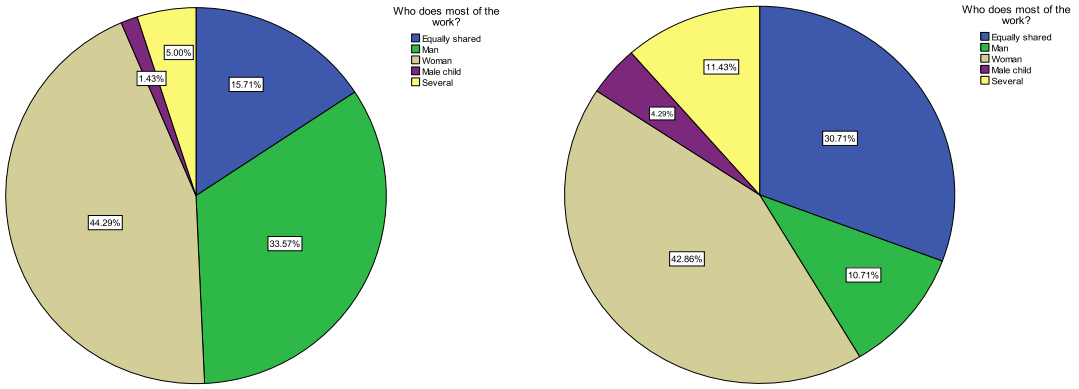

Figure 3. On and off farm labour responsibilities within household

3.5. Sources of cash incomes

Table below shows the different sources of cash income in the households surveyed. Employment on other farms (25.2%) and small business (21.7%) are the main sources of cash incomes. Remittances are also important. Approx. 5.6% of the households surveyed have no sources at all of cash income.

Table 8. Sources of cash income

Source of Cash income	% of households
Employment on someone else's farm	25.2
Other employment	5.3
Business	21.7
Remittances or gifts	15.7
Payment for environmental services	2.4
Payment from projects/Government	3.0
Loan/Credit from formal source	3.9
Loan/Credit from informal source	12.8
Renting out farm machinery	3.9
Renting out your own land	0.6
No other source of cash	5.6

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

4.1. Crop-related changes

Over the past 10 years, all the surveyed households indicated to have made some changes in their cropping system. Approx. 84% of the households reported changes of 2 or 3 of their main crops with 1 crop being different in the last ten years while 16% of the households reported making changes of 2 or 3 of their main crops with 2 or 3 being different from those of the last ten years.

Regarding adoption of new crop varieties, all surveyed households reported to have adopted 3 or more new crops and/or varieties in the past ten years. With respect to cropping related changes, the observations show that, all households had made 3 or more cropping related changes over the past ten years. Below is the list of cropping related changes of which three or more were reported to have been changed:

- Introduced intercropping;
- Earlier land preparation;
- Earlier planting;
- Later planting;
- Expanded area;
- Reduced area;
- Started using pesticides/herbicides;
- Integrated pest management;
- Integrated crop management.
- On water management related changes, all the sampled households reported making changes to 2 or more of the water management practice below;
- Started irrigating
- Introduced micro-catchments
- Introduced improved irrigation
- Introduced improved drainage
- On soil management related changes, the following were considered;
- Stopped burning;

- Introduced crop cover;
- Introduced ridges or bunds;
- Introduced mulching;
- Introduced terraces;
- Introduced stone lines;
- Introduced contour;
- Introduced rotations;
- Started using or using more mineral/chemical fertilizer;
- Started using manure/compost.

Reasons for crop related changes

When asked about the reasons for these changes, markets, climate, land, labour, pests or diseases and projects were listed by the respondents

Table 9. Reasons for crop-related changes

Reason	Percent
Markets	16.7
Climate	16.7
Land	16.7
Labour	16.7
Pests/diseases	16.7
Projects	16.7

4.2. Livestock-related changes

Most of the household surveyed keep animals (goats, sheep, chicken, and poultry) for different reasons. The majority of the households (about 88%) surveyed reported rearing 3 animal types as their most important farm animals.

On whether households made changes to their most important farm animals, almost 94% of the households reported to have made changes to their most important farm animals over the past ten years. Also 87% of the households reported to have made changes to types of 2-3 animals and at most 1 is different to 10 years.

On the adoption of new animal types of breeds, all the surveyed households reported to have introduced 3 or more new animal types. Also, all the households sampled reported making 3 or more herd related changes. It was also observed all the sampled households reported making:

- Changes to 2 or more animal management related changes
- Changes to animal feed related changes.
- All the sampled households' also made other changes to 1 or more farm animal.

Reasons for animal related changes

The reported reasons for livestock related changes were markets, climate, labour, pests or diseases and projects (Table 10).

Table 10. Reasons for livestock-related changes

Reasons	Percent
Markets	20
Climate	20
Labour	20
Pests/diseases	20
Projects	20

5. Food Security

The monthly source of food security for the household was queried, i.e. whether it came from their own farm or elsewhere, for each month, and also during which months of the year they struggle to have enough food to feed the household from any source.

Results indicate that household get their food from October to March mainly from own farm and from March to September from off-farm source (Figure 4). Food shortage is around the months of May-June-July-August before the harvest starts (Figure 5).

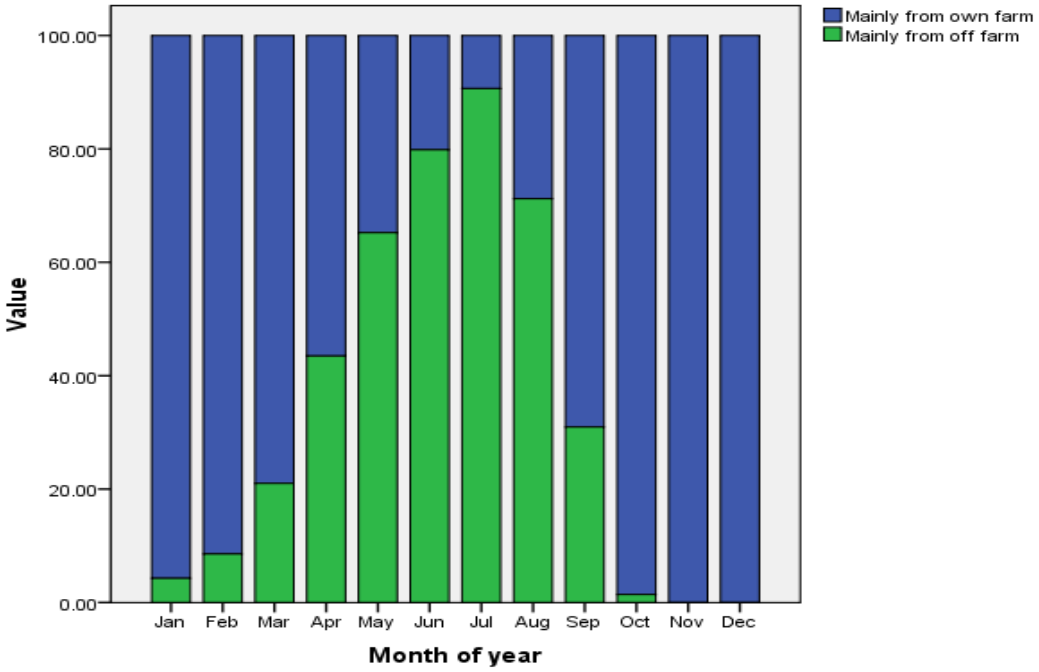

Figure 4. Food sources during the year

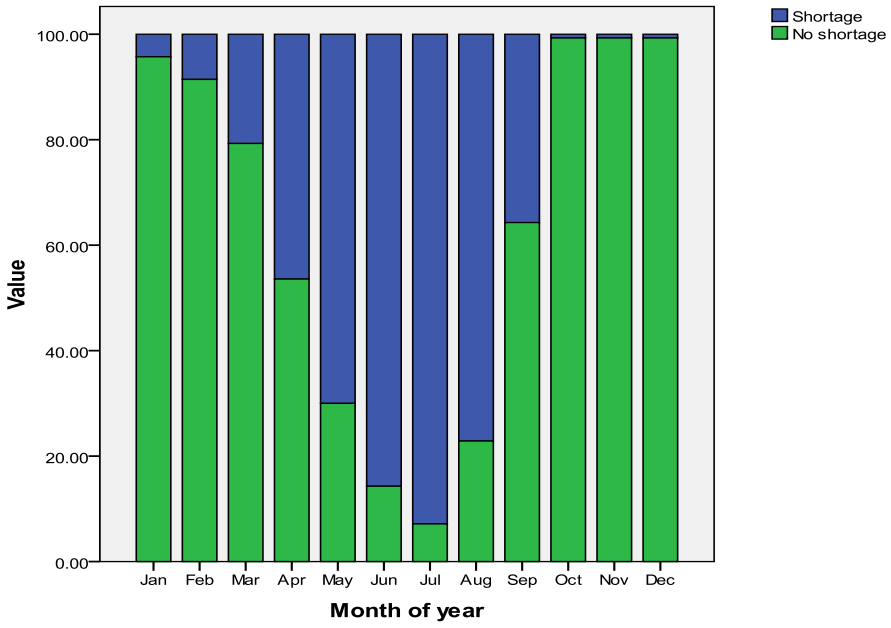

Figure 5. Food shortage and no shortage periods

Food security Index

The food security index we created is based upon the number of months the household has difficulty getting food from any source (i.e. from their own farm or stores, gifts, purchases or transfers). The table below summarises the food security index. About 4% of the surveyed households in the Lawra-Jirapa site of Ghana are "food secure" over the whole year, the majority of households (70%) has access to food over 8-9 months of the year and 26.4% of the households are food insecure almost half of the year.

Table 11. Food security index

Percentage of sampled households			
>6 months hunger period	5-6 months hunger period	3-4 months hunger period	Food year round/No hunger period
0	26.4	70	3.6

6. Land and water

6.1. Water for agriculture

The table below gives the different sources of water for agriculture. It shows that 91.4% of the households surveyed do not use any of the water sources listed in the table. Most make use of rainfall water for agricultural purposes. Very few (approx. 4%) of the households make use of dams and boreholes).

Table 12. Water sources for agriculture

Water Sources	% of household
Irrigation	0.7
Tanks for water harvesting	0.7
Dams or water ponds	3.6
Boreholes	3.6
None of the above	91.4

6.2. Land use

Table 13 shows the total land size owned by the households. More than 97% of the households own more than 5ha of land, while 3% said to have between 1-5 ha. For those with more than 5ha, approx. 76% of these households used the land for agricultural purposes (crops).

Table 13. Total Land access by household

Land owned/rented	% of household
Between 1 and 5 hectares	2.9
More than 5 hectares	97.1

6.3. Use of machinery

The use of machinery at the site is shown in Table 14 below. Machinery is used by 69% of households surveyed for their farming activities. 17% of the household report hiring tractor services with very few households, about 8% hiring animal drawn plough.

Table 14. Households use of machinery and labour

Type of machine/labour	% of households
Hired animal drawn plough	7.6
Hired tractor	16.8
Hired farm labour	69.0
None of the above	6.5

7. Inputs and credit

When asked about the use of inputs on their farm, 31% of the households reported using purchased inputs (pesticides). Fertilizer is also used and has been reported by 27% of the households, and 18% used veterinary drugs. About 7% only had received credit for agricultural activities in the past 12 months.

Table 15. Purchased input use

Type of purchased input	% of households
Seed in last 12 months	11.5
Fertilizer in the last 12 months	27.1
Pesticides in past 12 months	30.6
Veterinary medicine in past 12 months	18.4
Credit for agric. activities in past 12 months	6.6
None of the above	5.9

There are 7% of households that neither use purchased input nor did receive credit for agricultural activities in the past 12 months. The 27% of households who reported using fertilizer only use NPK.

8. Climate and weather information

Most households surveyed (84%) reported having received some kind of information on weather or climate. The types, sources, recipients and use of this information are described below.

8.1. Types of weather-related information

Table below presents the types of information received by the households and the % of households reporting that women and bother men and women are receiving the information. Average of the households surveyed receives different types of information from forecast of extreme event to pest or disease outbreak, forecast of the start of the rains, etc.

Table 16. Types of weather-related information received

Type of weather related information	% of HHs receiving information	% of HHs reporting women are receiving the information	% of HHs reporting both are receiving the information
Extreme events	64.5	4.7	30.8
Pests & disease out break	60.6	7.0	32.4
Start of the rains	58.1	3.2	38.7
Weather for the next 2-3 months	55.6	2.8	41.7
Weather for the next 2-3 days	55.6	2.2	42.2

- Forecast of extreme events

Results of whether households received information on the forecast of extreme events show that 76% of the surveyed households report receiving such information. When asked of the source of information, 47% of the households said they received the information from radio while 37% of the households report receiving the information from friends, relatives or neighbours.

Table 17. Sources of information on forecast of extreme events

Source of information	Number of responses	% of households
Radio	85	47.2
Television	1	0.6
Government extension or veterinary officers	5	2.8
NGO project officers	1	0.6
Friends, relatives, or neighbors	67	37.2
Your own observations	17	9.4
Local group/gatherings/meetings	1	0.6
Religious faith	2	1.1
Cell phones	1	0.6

On whether upon receiving the information, households received advice, 92% of the households report receiving advice in addition to the information and 89% of the household report using the advice. It was observed that, the information on extreme events helped households to change their land management practices, timing of farming activities with changes in crop varieties and types.

- Forecast of pests and diseases outbreak

Results of whether households received information on pests and disease outbreak indicate that more than 50% of the households report receiving such information. Men in the households are mostly those who get the information on the pests and diseases outbreak and that through radio and family/relatives/neighbours. 87% of the households receiving the information said that it is accompanied with advice which they use. It was also found that information on pests and disease outbreak were used for decision making processes regarding livestock management (livestock type and breed for example).

Table 18. Actions upon receipt of pests or disease outbreak

Aspects of farming changed	Number of responses	% of households
None	7	9.6
Land management	2	2.7
Crop type	1	1.4
Crop variety	2	2.7
Change in inputs (seed, fertilizer, pesticides)	3	4.1
Use of manure/compost/mulch	1	1.4
Change in timing farming activities	1	1.4
Soil and water conservation	1	1.4
Tree planting	1	1.4
Livestock type	30	41.1
Livestock breed	12	16.4
Feed management	2	2.7
Insurance	1	1.4
Other	9	12.3

- Forecast of start of rains

Less than half of the households report receiving information on forecast of the start of rains. Radio remains the main source of information on forecast of the start of the rains.

Table 19. Sources of information on the forecast for the start of rains

Source of information	Number of responses	% of households
Radio	54	45
Government extension or veterinary officers	3	2.5
NGO project officers	2	1.7
Friends, relatives, or neighbors	43	35.8
Your own observations	16	13.3
Local group/gatherings/meetings	1	0.8
Religious faith	1	0.8

It was also observed that the recipients of such information in the households were mostly men and 95% of the households receive the information with advice of which 96% of the cases use the advice to change aspects of their farming activities such;

- Change in timing of farming activities (31%)
- Crop varieties (18%)
- Crop type (14%) and
- Land management (13%)

- Forecast of weather for the next 2-3 months

On whether households received information on forecast of weather for the next 2-3 months, only few households (26%) report receiving such information. Majority of the household said to receive the information from the radio and family/relatives or neighbours. Majority of the households also report that men are main recipients of the information. 94% of the households that receive the information report receiving it with advice and 91% of them report using the advice. Changes of farming activities due to forecast of weather for the next 2-3 months are shown in table below.

Table 20. Actions upon receipt of weather for the next 2-3 months

Aspects of farming changed	Number of responses	% of households
None	3	7.0
Land management	6	14.0
Crop type	6	14.0
Crop variety	9	20.9
Change in inputs (seed, fertilizer, pesticides)	3	7.0
Use of manure/compost/mulch	1	2.3
Land area	1	2.3
Field location	2	4.7
Change in timing farming activities	11	25.6
Soil and water conservation	1	2.3

9. Community groups

The table below shows the type of community groups and number of households in the groups.

Table 21. Community group membership

Type of community group	Number of responses	% of households
Tee nursery/planting	6	3.0
Fish pond	1	0.5
Fishing	2	1.0
Forest product collection	5	2.5
Soil improvement activities	1	0.5
Crop introduction/substitution	1	0.5
Irrigation	2	1.0
Savings or credit	47	23.7
Agricultural product marketing	15	7.6
productivity enhancement	43	21.7
Seed production	1	0.5
Vegetables production	9	4.5
Other groups	11	5.6
Not a member of any group	54	27.3

Group membership appears to be low in the Lawra-Jiarapa site of Ghana with savings or credit group membership attracting about 24% of the households.

10. Assets

Assets were divided into five categories: transport related, production related, information related, energy related and luxury. The totals of these categories of assets were used to create the following index:

1 = 0 asset (basic level)

2 = 1-3 assets (intermediate level)

3 = 4 or more assets (high level)

The results of the asset index for the sampled households are as in table 20. It shows that 55% of the surveyed households have none of the assets while 44% of them have between 1-3 of these assets and only 1% of the household has 4 or more assets.

Table 22. Asset index

Number of assets	% of households
None(Basic level)	55
1 – 3(intermediate level)	44
4 or more	1

50% of the households sampled own a radio and 42% of the sampled households have cell phones.