



CLIMATE  
CHANGE  
AGRICULTURE AND  
FOOD SECURITY

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

# Summary of Baseline Household Survey Results: Hoima District, West Central Uganda

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## Abstract

Hoima District, in West Central Uganda, is predominantly agricultural. A baseline survey, supported by the Climate Change, Agriculture and Food Security Project (CCAFS) was undertaken in late 2010 aimed at describing the characteristics of farming systems and better understanding how they have changed over time. It also gathered information on the socio-demographic characteristics of these farming communities, basic livelihood and welfare indicators, agriculture and natural resources management practices and strategies, access and use of climate and agricultural-related information, and current risk management, mitigation and adaptation practices. Randomly selected households were the units of analysis and a face-to-face questionnaire was the primary tool that was used for data collection.

Findings from this baseline survey of 140 households reveal that Hoima farms have diversified livelihood sources, with most producing a range of food crops, cash crops, fruits, vegetables, small livestock, livestock products, and fuelwood. Additional sources of livelihoods for some households are fish, fodder, honey, timber, charcoal, large livestock and manure/compost. Cassava, beans, sweet potatoes, and maize are key food crops, and chickens, pigs, dairy cows, and goats are important for food and incomes – both now and a decade ago.

Food security is a major issue in Hoima – only one-third of households reported being food secure throughout the year. One-tenth of these families face food deficits for over six months per year. Women play a critical role in food production in Hoima, and it appears that they are able to access weather-related information, although around one-fifth of households report that only men are receiving such information.

Agricultural production strategies are quite diversified for most households, but almost half of them depend to some extent on working on other's farms for part of their income. And 7% are purely subsistence farmers that sell none of their agricultural output. Only one-fifth are arguably 'commercialized' farms. Few households are using chemical fertilizers or purchasing other agricultural inputs.

These farmers have been making changes to their agricultural practices over the last decade. New varieties of cassava, rice, banana, beans, peanuts, sweet potatoes, and maize have all been introduced. The main reasons given for introducing new crop varieties included seeking higher yields, switching to better quality varieties, switching to earlier maturing varieties, and adopting drought tolerant varieties.

The most significant changes in land management practices reported were earlier planting, introduction of intercropping, introduction of crop rotations, earlier land preparation, expansion in area planted, and later planting. Most of these changes appear to be aimed at enhancing agriculture production/yields; there were very few changes targeting sustainable land management and ecosystem and environment protection (e.g. water and soil conservation measures such as composting, terracing, etc.). Storage structures for water for agriculture, including irrigation facilities, tanks for water harvesting, dams or water ponds, and boreholes were only reported by a few households. Three-quarters of respondents said they were planting or protecting

trees on their farms, so some actions that contribute to mitigation of greenhouse gases are occurring.

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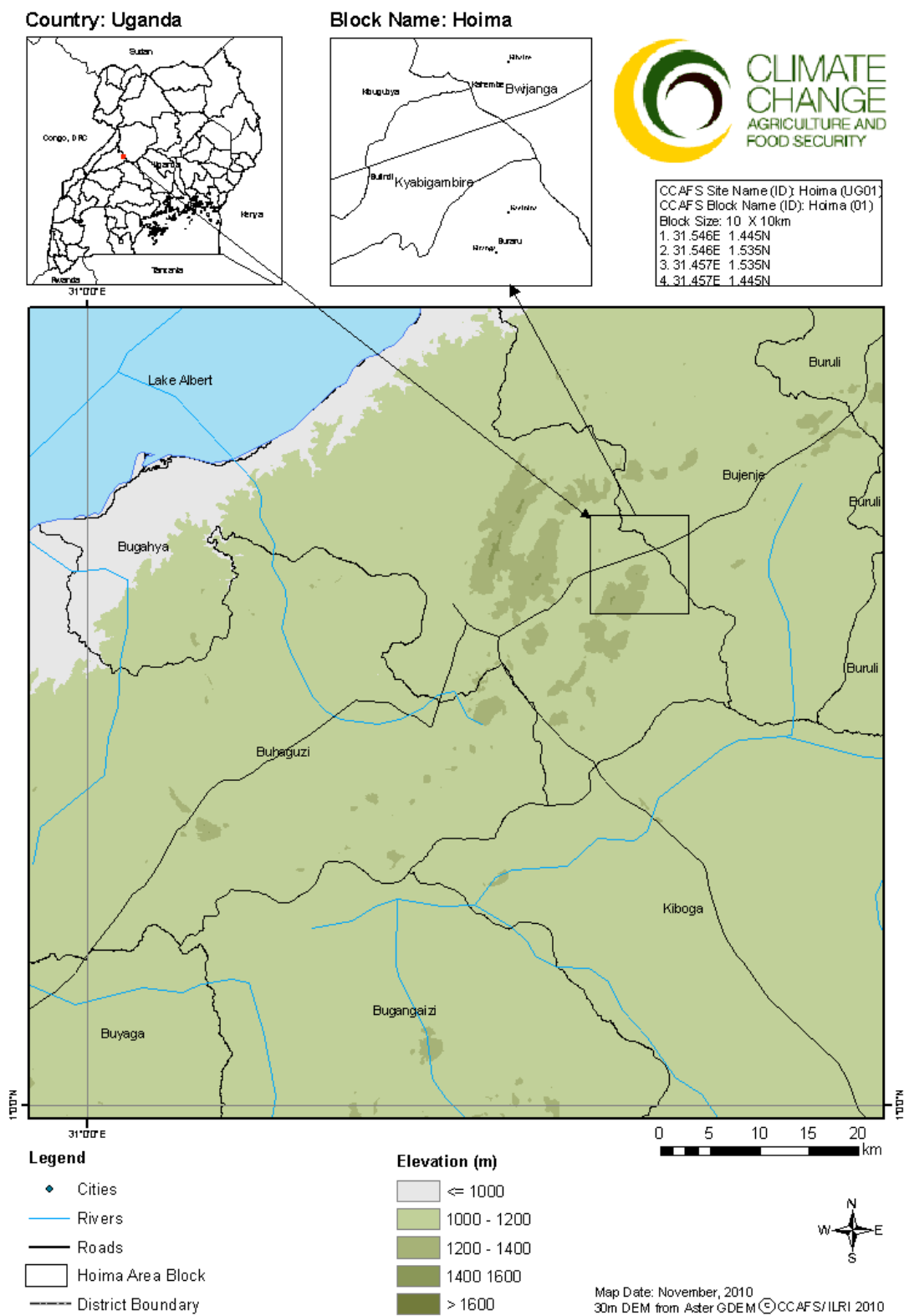
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## 1.0 Introduction

This report presents the results of an analysis of a CCAFS baseline household survey carried out in January 2011 in seven villages, with 140 households, in Hoima District, Uganda (see 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 agricultural-related information and current risk management, mitigation and adaptation practices. The aim was to capture some of the diversity in the landscape, across communities and households, with sufficient precision in some of these indicators to encapsulate changes that occur over time, as these same households will be revisited in five to ten years and these changes observed. For full details of survey team members and villages surveyed see Annexes 1 and 2. The questionnaire and training materials associated with it, including data entry and management guidelines, can be found at [www.ccafs.cgiar.org/resources/baseline-surveys](http://www.ccafs.cgiar.org/resources/baseline-surveys).

The questionnaires included information on the following:

- Household respondent and type
- Demography
- Sources of livelihood
- Crop, farm animals/fish, tree, soil, land and water management changes
- Food security
- Land and water
- Input and credits
- Climate and weather information
- Community groups
- Assets



**Figure 1. Study site in Albertine Rift, Hoima district**



## 1.1 Household types and respondents

A total of 140 respondents were interviewed, half of which were female. Just over half of the respondents were the household heads and almost a third were spouses of household heads (Table 1.1). Ten households were represented by children of household heads, while three were either parents or siblings of the head of the household. There was one respondent who was either a grandchild or nephew/niece of the household head.

The majority (92%) of respondents came from the main ethnic group in Hoima, Banyoro, with a few from other ethnicities, such as Alur and Lugbara (1.4%) and Baganda and Banyankole (0.7%). Sixty eight percent of households were male-headed, with a wife or more than one wife, while 20% were female-headed households (either divorced, single or widowed).

Table 1.1 Household type among study respondents in Hoima District

Household type	Number of households	Percentage of households
Male headed with wife or wives	95	68
Male headed (divorced, single or widowed)	14	10
Female headed (divorced, single or widowed)	28	20
Female headed, husband away and husband making most decisions	2	1
Female headed, husband away and wife making most decisions	1	1

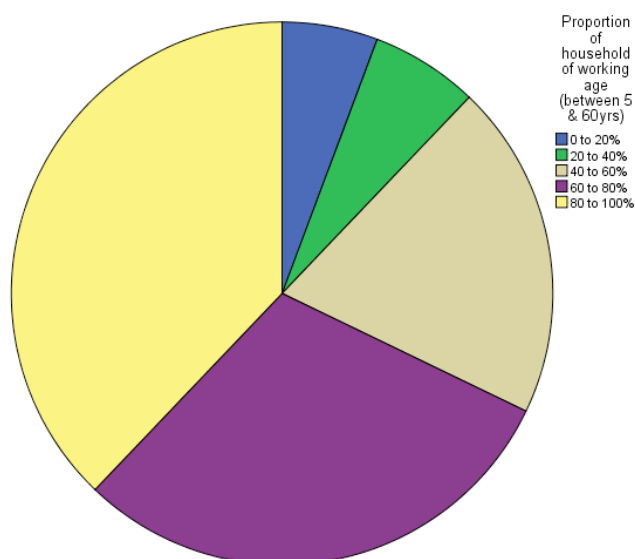
## 2.0 Household demographics

43% of surveyed households had five or fewer family members, and 10% had over 10 members. The average number of family members per participating household was 6.3, which is higher than the average household size in rural areas for Uganda (4.9).

About one third of households reported that no one in the family was below five years of age. 23% had one household member under five years, 6% had two, and 8% had three under-fives.

Nearly three quarters of respondents said that there was no one above 60 in their household. Twenty two percent said they had one person over 60, 5% had 2 members over 60 and only one household had three members above 60. As seen in Figure 2.1 this means that over two thirds of households (68%) have well over half of their members of working age.

**Figure 2.1 Proportion of the household that is of working age**



## 2.1 Education levels

The survey asked respondents to give the highest level of education attained by any full-time resident household member (Table 2.1). Nearly 46% had at least one member with a primary school education, while 33% had at least one member with a secondary school education. There were only 19 households (14%) with at least one family member who had been educated beyond secondary level. Eight percent of households had no member with formal education.

**Table 2.1 Highest Level of Education Obtained by someone within the Household**

Highest level of education of any resident household member	Number of households	% of households
No formal education	11	8
Primary	64	46
Secondary	46	33
Post secondary	19	14

## 3.0 Sources of livelihoods

### 3.1 On-farm livelihood sources

All households reported growing food crops, and 60% produce cash crops (primarily tea or coffee) (Table 3.1a). Almost all produce vegetables and fruit. Small livestock (sheep, goats, chickens or pigs) is raised by 81% of households, but only 18% have cattle. Livestock products (milk, eggs, meat) are an important livelihood source for 69% of surveyed households.

Women are key actors regarding food production in Hoima. Around one-half of households reported that women were mainly responsible for the food crops, raising small livestock, and gathering fuelwood. For 71% of households, vegetable production is the main responsibility of women, and this figure is 40% for fruit production.

All households reported that the food crops they produced were consumed or used on the farm. Over three quarters (85%) said that they sold some food crops, while the remainder reported that they never sold any food crops (Table 3.1b).

With regard to food processing, 78 households (56%) indicated that they process some of the food produced on-farm, while the rest said they did not process any on-farm food. Those households who did process food reported that they consumed or used some of it, but of these, only 45 (32%) sold it for cash. The main persons responsible for food processing were women in 39% of the households.

**Table 3.1a Percentage of households producing various agricultural products and labour responsibilities of women and children**

		Percentage of households stating these household members do "most of the work" in relation to this product:	
Product	% of households producing:	Female	Children
Food crops (raw)	100	48	3
Food crops (processed- e.g. snack foods)	56	39	1
Cash crops (e.g. tea, coffee)	60	21	2
Fruits	89	40	4
Vegetables	90	71	2
Fodder	1		1
Large livestock (cattle)	18	4	1
Small livestock (sheep, goats, pigs, chickens, donkey)	81	49	1
Livestock products (milk, eggs, etc)	69	42	1
Fish	1		
Timber	10	2	1
Fuel wood	73	48	5
Charcoal	16	1	3
Honey	6		1
Manure/compost	24	12	1

**Table 3.1b Consumption and sale of products**

Product	Of those producing, percentage of households:	
	Consuming	Selling
Food crops (raw)	100	85
Food crops (processed- e.g. snack foods)	54	32
Other cash crops (tea, coffee, sisal, cotton, jute, sugar cane, etc)	28	50
Fruits	89	28
Vegetables	90	26
Fodder	1	
Large livestock (cattle, buffalo, camels)	14	11
Small livestock (sheep, goats, pigs, chickens, donkey)	69	62
Livestock products (milk, eggs, etc)	69	34
Fish	1	
Timber	7	4
Fuel wood	73	6
Charcoal	14	14
Honey	2	5
Manure/compost		24

### 3.2 Off-farm livelihood sources

Respondents cited that, in order of importance, fuelwood, fish, fruit, and honey were agricultural products they gathered from areas outside their own farms. Other products collected off-farm, but not as frequently, were fodder, timber, charcoal, and manure/compost.

**Table 3.2 Agricultural products coming from off farm sources/areas and division of labour**

Product	Percentage of households stating these household members do 'most of the work' in relation to this product:		
	% of households	Female	Children
Food crop	54	23	1
Fruit	42	14	7
Fodder	4		
Fish	54	17	1
Timber	16	4	
Fuel wood	63	42	2
Charcoal	18	6	2
Honey	34	11	
Manure/compost	5	2	

### 3.3 Diversification Indicators

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

1=1-4 products (low production diversification); 2=5-8 products (intermediate production diversification) 3=more than 8 products (high production diversification).

On the selling/commercialization side, 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 (Table 3.3) suggest that most households (62%) are quite diversified in their agricultural production strategies, producing between 5 and 8 different types of products. Almost one-quarter of respondents said they were producing 9 or more. Sixteen percent of household are not very diversified, with four or fewer different agricultural outputs.

On the selling side, 7% are subsistence farmers that sell nothing. Almost half sell between 3 and 5 products from their own farms, and 18% are quite highly commercialized, marketing more than six different agricultural products.

**Table 3.3 Production and Commercialization Diversification Indices**

<b>Production Diversification</b>	<b>% of households</b>
1-4 products (low production diversification)	16
5-8 products (intermediate production diversification)	62
9 or more products (high production diversification)	22
<b>Selling/Commercialization Diversification</b>	
No products sold (no commercialization)	7
1-2 products sold (low commercialization)	29
3-5 products sold (intermediate commercialization)	46
6 or more products sold (high commercialization)	18

### **3.4 Sources of cash income**

Forty-one percent of households reported that they had sought employment on someone else's farm during the year, and 11% of these said this was a new source of income. Other significant non-farm sources of income were: other paid employment, business, remittances and gifts, as well as loans from both formal and informal sources (Table 3.4).

**Table 3.4 Sources of Cash income other than from own farm**

Sources of cash income	% of households
Employment on someone else's farm	41
Other off-farm employment	23
Business	34
Remittances/gifts	37
Payment for environmental services	2
Payment from govt or other projects/programs	8
Loan or credit from a formal institution	16
Informal loan or credit	31
Renting out farm machinery	5
Renting out your own land	12
No off – farm cash source	10

## 4.0 Crop, farm animals/fish, tree and soil, land and water management changes

### 4.1 Crop-related changes

Currently, the most important crops (in descending order) are cassava, beans, sweet potatoes and maize. There has been very little change in this order of importance in the last 10 years.

According to respondents, the crop varieties introduced in the last 10 years include cassava, rice, bananas, beans, peanuts, sweet potatoes, and maize (Table 4.2). The main reasons given for introducing new crops were higher yields, better quality, early maturing and drought tolerance.

Table 4.1 shows the percentage of households that reported making a wide range of changes in agricultural practices with respect to their crops. Two-thirds or more of the households have adopted higher yielding and/or better quality varieties in the last decade. Earlier planting was also a change taken up by one half of all households, followed closely by the introduction of a shorter cycle variety, drought tolerant variety, and/or disease-resistant variety. Intercropping, rotations, and earlier land preparation have also been introduced by around 1/3 of households. One-quarter of respondents have started using pre-treated or improved seeds.



**Table 4.1 Changes with respect to land and crop management practices**

<b>Crop-related change</b>	<b>Households (%)</b>
Introduced higher-yielding variety	73
Introduced better quality variety	64
Earlier planting	53
Introduced shorter cycle variety	45
Introduced drought tolerant variety	42
Introduced rotations	38
Earlier land preparation	38
Expanded area	36
Introduced pest resistant variety	36
Introduced intercropping	35
Later planting	29
Stopped using a variety	28
Started using pre-treated/improved seed	25
Reduced area	25
Introduced mulching	21
Started adding manure/ compost	18
Introduced ridges/ bunds	17
Introduced longer-cycle variety	16
Pesticides/ herbicides	15
Stopped burning	15

### **Reasons for changing crop and land management practices**

Table 4.2 shows the reasons cited for making the changes in agricultural practices. Market-related reasons show up as very important drivers of change. 42% of households said they had made a change in order to get a better price, while 36% responded that it was because they got a better yield. Another one-quarter of households changed their behaviour due to new market/selling opportunities.

Other non-climate-related drivers of change included having to deal with less productive land (47%), and conversely, being able to use more productive land (26%). Having less land

changed an agricultural practice(s) of 13%, while getting more land did so for 14% of households.

Climate-related reasons behind changing agricultural practices included more erratic rainfall (20%), less overall rainfall (19%), more overall rainfall (14%), and more frequent droughts. (13%).

**Table 4.2 Reasons for changes made in farming practices**

<b>Climate-related reasons</b>	<b>Percentage of responses</b>	<b>Non-Climate related reasons</b>	<b>Percentage of responses</b>
More erratic rainfall	20	<b>Land</b>	
Less overall rainfall	19	Land is less productive	47
More overall rainfall	14	Land is more productive	26
More frequent droughts	13	Less land	13
More frequent floods	2	More land	14
Strong winds	5	<b>Markets</b>	
Later start of rains	9	Better yield	36
Earlier start of rains	7	Better price	42
More cold spells or foggy days	1	New opportunities to sell	23
More frequent cyclones	1		
Higher salinity	4		
Higher tides (sea level has risen)	1		
Higher temperatures	2		
Lower groundwater table	2		

## **4.2 Livestock-related changes**

Only 15% of households reported having no livestock. The survey asked respondents about their most important livestock species today and 10 years ago. Currently, their main animals, in order of importance, are chickens (39%), pigs (30%), goats (17%) and dairy cows (11%). The order of importance and percentages were the same 10 years ago.

Half of the households reported making some changes with respect to their livestock. When respondents were asked which new animal types they had introduced in the last 10 years, dairy cows were mentioned as the most popular, followed by pigs, goats and chickens.

Of the 77 households reported having made changes related to chickens, 42% had reduced the number of chickens kept while at the same time, 17% had increased their flock size. 22% had introduced chickens, and 3% had introduced housing for the chickens.

Changes in management were also reported for goats. For those household reporting changes, 43% said they had reduced the number of goats kept, and 19% had increased their herd size. Only a few households had introduced other changes such as stall-keeping, fencing or cut and carry.

### Reasons for Changes in the Livestock Sector

When asked about the reasons why changes were made to their livestock management practices, the most prominent causes for drivers of change were the appearance of new diseases, and better prices, for chickens. For goats, they were better prices, new opportunities to sell, and access to more productive goat breeds.

## 4.3 Adaptability/Innovation Indicator

An adaptability/Innovation Indicator was defined as the following:

0-1=zero or one change made in farming practices over last 10 years (low level)

1=2-10 changes made in farming practices (intermediate level)

2=11 or more changes made in farming practices (high level)

We see in Table 4.5 that 16% of households made zero or only one change in their agricultural practices over the last 10 years, almost one-half of households made between 2 and 10 changes, and 37% made 11 or more changes. In other words, over one-thirds of these households have been quite adaptive to their changing circumstances and making many adjustments or changes in their farming practices over the last 10 years. Further analysis of the specific adaptations these more adaptive households in particular are making is needed.

**Table 4.5 Adaptability/Innovation index**

Number of changes made in farming practices in last 10 years:	% of households citing
Zero or One (low)	16
2-10 changes (intermediate)	47
11 or more changes (high)	37

#### 4.4 Mitigation Indicatorss

Several climate mitigation-related behavioural changes (i.e. those that either reduce greenhouse gas (GHG) emission-reducing and/or enhance GHG storage) were used to create the following indicators:

**Tree management.** This indicator shows whether a household has either protected or planted trees within the last year.

**Soil amendments.** This indicator shows if the household has used fertilizer in the last year, or have started using fertilizer or manure on at least one crop.

**Input intensification.** There are 7 'changes in agricultural practices/behaviour over the last 10 years' considered here to create an indicator with 3 levels - no intensification (none of the following), low intensification (1-3 of the following), and high intensification (4-7 of the following). They are:

- Purchased fertilizer
- Started to irrigate
- Started using manure/compost
- Started using mineral/chemical fertilizers
- Started using pesticides/herbicides
- Started using integrated pest management techniques
- Planted higher yielding varieties

**Productivity Indicator.** This indicator shows if a household has reported achieving a better yield from any crop, or that their land is more productive for any crop over the last 10 years – such households are classified as showing an "increase in productivity".

Table 4.6 shows the results for the mitigation-related indicators for the surveyed households in Hoima. Three-quarters of households reported having planted and/or protected trees over the last year. Just one-third has undertaken soil improvement (e.g. fertilization) actions. One-half of surveyed households had experienced increases in agricultural productivity. One-quarter have not increased their input use, 68% have intensified their input use at a low level, and only 9% have invested in input intensification measures at a higher level.

**Table 4.6 Mitigation-related indicators**

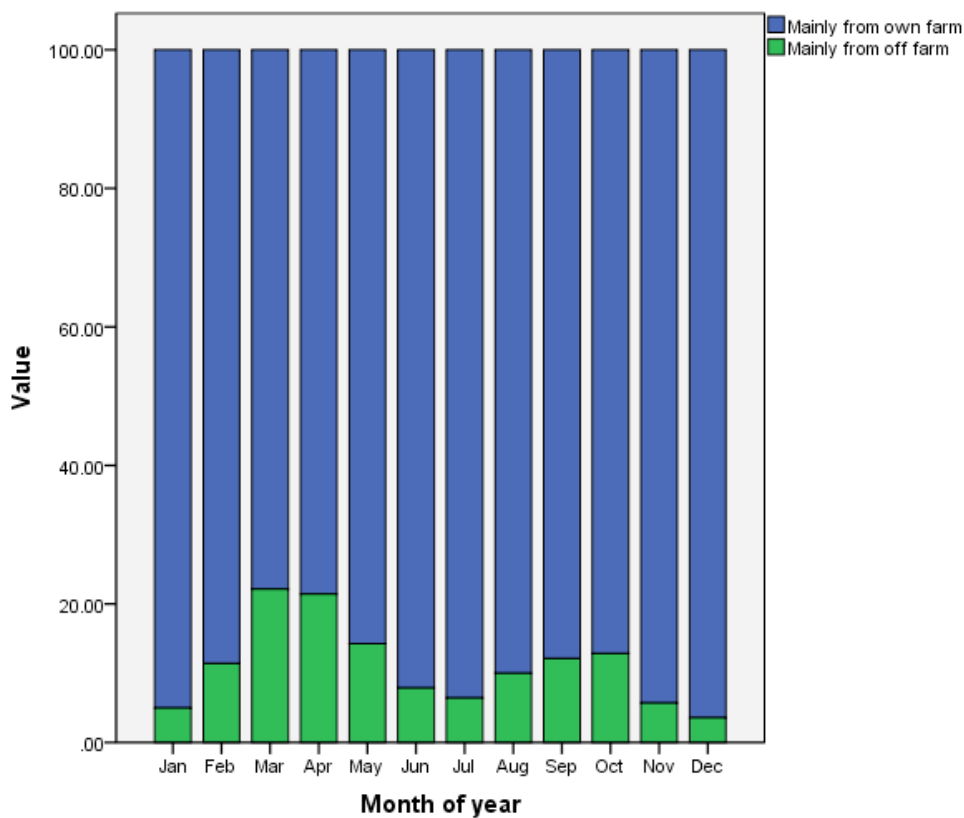
Indicator	No (% of hh's)	Yes (% of hh's)
Tree management	25	75
Soil amendments	69	31
Increase in productivity	52	48
Input intensification	24	Low-68; High-9

## 5.0 Food security

The monthly source of food for the family was queried, i.e. whether it came mainly from their own farm, or elsewhere for each month (in an average year). Households were also asked during which months of the year they struggled to have enough food to feed their family, from any source.

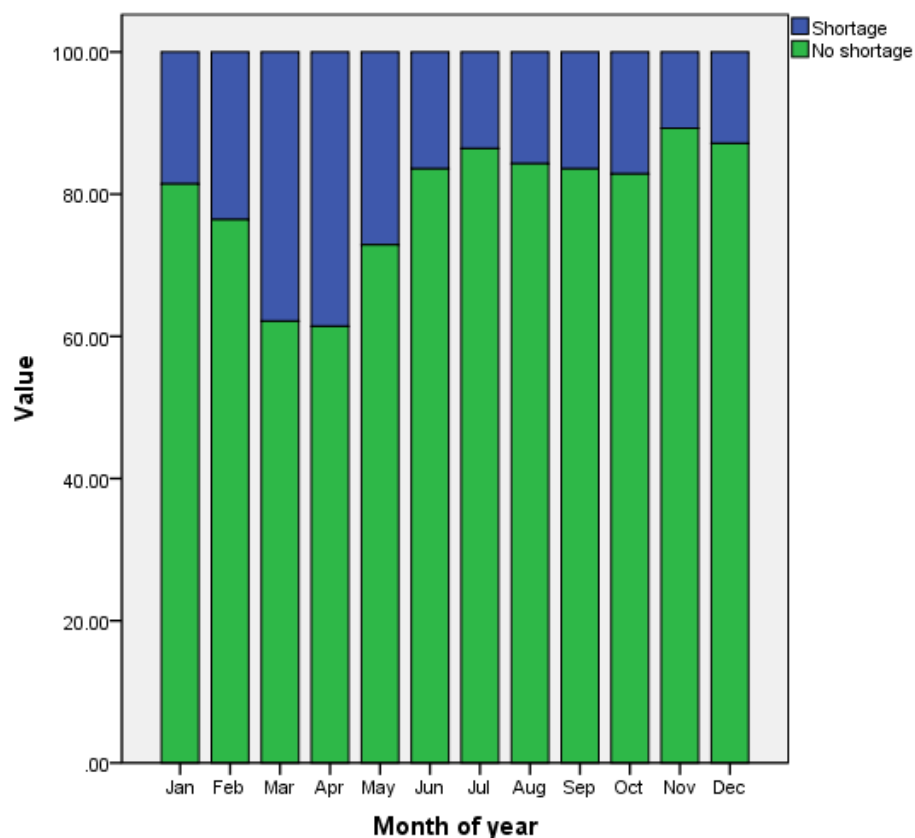
Figure 5.1 shows the reported source of food, from either on- or off-farm, for each month. Evidently, most households get their food supplies from their own farms throughout the year. The worst months for food supplies, when more than 20% of households get their food supplies mainly from off-farm sources (e.g. purchases, gifts/transfers, food aid) are March and April. These months mark the beginning of the rains after several months of dry season.

**Figure 5.1 Main source of food for the household throughout the year**



We see in Figure 5.2 the proportion of households facing food deficits, from any source, by month. Up to 40% of households suffer food deficits in March and April in Hoima. Ten percent or more are not getting a sufficient amount of food for their families throughout the year.

**Figure 5.2 Hunger/Food shortage months**



## 5.1 Food Security Indicator

The food security indicator 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 stores, gifts, purchases or transfers).

For our surveyed households in Hoima, 31% are 'food secure' all year long. Another 35% suffer food deficits for 1-2 months/year. 16% of these households struggle to get enough food to feed their family for 3-4 months, 9% for 5-6 months, and 10% for more than six months per year.

**Table 5.1 Food Security Indicator**

<b>Percent of surveyed household reporting:</b>				
More than 6 food deficit months/yr	5-6 food deficit months/yr	3-4 food deficit months/yr	1-2 food deficit months/yr	Food all year round/No food deficits
10	9	16	35	31

## 6.0 Land and water

### 6.1 Water for agriculture

Very few of the surveyed households claimed to be in possession of storage structures for water for agriculture. For example, only 4% of households had tanks for water harvesting; 2% of households said they had water for irrigation, dams or ponds, or boreholes; and while five had inlet/water pipes/gates, none had water pumps, either solar, wind, or any other type.

**Table 6.1 On-farm water sources for agriculture**

On- farm agricultural water source	% of Households
Irrigation	2
Tanks for water harvesting	4
Boreholes	2
Dams or water ponds	2
Inlet/water pipe	4
None of the above	86

### 6.2 Land use

The land available for each household includes both land that is owned by the household and land that is rented. As seen in Table 6.2, just one-third of households have access to less than one hectare of land, and 59% have access to between 1 and 5 hectares. Only 9% of households have more than 5 hectares.

**Table 6.2 Land access**

Number of hectares of land owned and rented in	% of households
Less than one hectare	32
1-5 hectares	59
Over 5 hectares	9

### Tree Planting

Over half (55%) of households said they had planted no trees on their farms in the last year. One-quarter had planted less than 10 trees, 14% planted between 11 and 50 trees, and 7% had planted over 50 years during the year.

## 7.0 Inputs and credit

Table 7.1 shows that for our surveyed households, 17% bought seed in the last 12 months, only 10% purchased fertilizer, 18% purchased pesticides, and 29% bought veterinary medicines. Only 9% of households receive some credit for agricultural activities, and one household had purchased agricultural insurance.

**Table 7.1 Purchased input use**

<b>In the last year, did you use:</b>	<b>% of households</b>
Purchased seeds	17
Purchased fertilizers	10
Purchased pesticides	18
Veterinary medicine	29
Received credit for agricultural activities	9
Bought crop or livestock insurance	1

Table 7.2 shows the types of fertiliser households were using. As shown above, only 10% of households in this area are applying any types of chemical fertilizers at all. The most common fertilizers applied are NPK and Urea. Percentages in this table are with respect to the households that applied fertiliser.

**Table 7.2 Types of fertilizers used**

<b>Fertilizer type</b>	<b>% of households</b>
Urea	39
NPK	44
DAP	3
CAN	3
Rock Phosphate	8
Local mixture	3



## 8.0 Climate and weather information

Seventy-three percent of respondents reported having received some kind of weather or climate-related information in the last 12 months. The specific types and sources of weather-related information were then further explored.

### 8.1 Types of weather related information

**Pest or disease outbreaks.** Over half (56%) of households received information about pest or disease outbreaks in the last year. Of these households, 60% heard it on the radio, 19% from friends or relatives, and 9% from government extension or veterinary officers. In 85% of these households, both men and women received this information.

**Extreme Events.** Roughly one-half of respondents reported that they received information regarding extreme events. Of those, 76% said that they heard it on the radio, a further 18% heard it from friends, relatives or neighbours, and 3% received this news from local groups or gatherings. Women were receiving word of extreme events as well as men (well over half of respondents said that 'both men and women' in the household receive such information, except in 21% of households that reported only men hearing it).

**Start of the rains.** Just over half (58%) of households are receiving information regarding the predicted timing of the start of the rainy season. Again, radio and friends/family were the most common sources of this information.

**Daily weather forecast.** Only 23% of households reported that they received daily weather forecasts (i.e. 2-3 day forecasts). Of those, 29% heard it on the radio, whereas 25% relied on local knowledge for such forecasts.

**2-3 month weather forecast.** One-third of households receive weather forecasts for the next 2-3 months. Radio was once again the most likely source of this information, listened to equally by both men and women in the household.

### 8.2 Use of weather related information

Advice as to how to use the weather information was also received by some households (Table 8.1), who were also asked if and what types of agricultural practice changes they made as a result of this advice. For those receiving forecasts of extreme events, pest or disease outbreaks, timing of the start of the rains, and 2-3 month weather patterns, most said that they also receiving some advice as to how to make use of that information, and that they did make changes in their farming practices as a result. The most common way these farmers used the information (i.e. all types) was to inform the timing of their farming activities (e.g. planting, weeding, harvesting). Interestingly, extreme event forecasts influenced their decisions as to tree planting, and pest or disease outbreak predictions influenced choice of variety to plant. Forecasts as to the timing of the start of the rains informed decisions on field location, and for the one-third of households that received longer-run (2-3 month) forecasts, decisions regarding soil and water conservation practices were influenced.

**Table 8.1 Use of weather-related information**

Type of information	% of households receiving information	% of households also receiving advice with information	% of households receiving advice that were able to use it	Key aspects of farming changed as a result
Forecast of extreme event	51	76	62	1. Timing of farming activities 2. Tree planting
Forecast of pest or disease outbreak	54	68	60	1. Timing of farming activities 2. Crop variety
Forecast of the start of rains	58	72	71	1. Timing of farming activities 2. Field location
Forecast of the weather for 2-3 months	33	87	55	1. Timing of farming activities 2. Soil and water conservation
Forecast of the weather 1-3 days	23	31	80	1. Timing of farming activities

### 8.3 Sources of assistance in climate-related crises

Just over half of households reported having experienced a climate-related crisis in the last 5 years. 94% said they had not received any type of assistance when this occurred. For those few households getting assistance, friends and family, NGO's and local CBO's were the source.

## 9.0 Community Groups

Around three-quarters of respondents said they belong to no agricultural or natural resource management-related group. For the one-quarter of households belonging to at least one group, membership was spread over 12 types of groups plus some unspecified ones (Table 9.1). The saving and credit group had the highest number of households as members (16%), followed by the productivity enhancement group (7%).

**Table 9.1 Group membership**

<b>Does someone in your household belong to the following groups?</b>	<b>% of households</b>
Tree nursery/tree planting	4
Water catchment/management	3
Soil improvement related	4
Crop introduction/substitution	3
Irrigation	2
Savings/credit related	16
Agricultural product marketing	4
Agricultural productivity enhancement related	7
Seed production	4
Vegetable production	4
Forest production	4
Other group not mentioned above	2
No agriculture/NRM group membership	73

## 10.0 Assets

### 10.1 Asset indicator

Households were asked about assets they had, from a set list which include the following:

Energy: solar panel, generator (electric or diesel), battery (large, e.g. car battery for power), biogas digester

Information: radio, television, cell phone, computer, internet access

Production means: tractor, mechanical plough, mill, thresher

Transport: bicycle, motorcycle, car or truck

Luxury items: fridge, air conditioning, electric fan, bank account, improved stove.

The total numbers of assets in all categories were added up and the following asset index created:

0=no assets (basic level)

1=1-3 assets (intermediate level)

2=4 or more assets (high level)

The results of the analysis for these Hoima households show that 9% have none of the household assets we inquired about, 63% of the surveyed households have between 1 and 3 of these assets, and 28% own 4 or more of these assets (Table 10.1).

**Table 10.1 Asset Index**

Number of queried assets	% of households
None (basic level)	9
1-3 (intermediate level)	63
4 or more	28

Table 10.2 shows the specific assets owned by households in the surveyed area. The most common asset was the radio, owned by 120 (86%) of the participating households, followed by a bicycle (66%) and cell phone (60%). The least common assets were tractors, cereal/grinding mills, fridges, and fishing nets, each owned by only one household. There was no single household with either a computer, mechanical plough, treadle pump, biogas digester, air conditioner, thresher, LPG, internet access, or boat.

Only 19% of households have a bank account.

**Table 10.2 Asset Ownership**

Type of Asset	% of hhs	Type of Asset	% of hhs
Radio	86	Electric fan	1
Television	6	Fishing nets	1
Cell phone	60	Bank account	19
Bicycle	66	Improved food/feed storage facility	14
Motor cycle	17	Water storage tank (domestic water)	4
Car or truck	4	Improved housing (brick, concrete)	37
Solar panel	5	Well/borehole (for household water)	11
Tractor	1	Running water in dwelling	3
Mill	1	Electricity from Grid	1
Improved stove	7	Improved roofing (tin, tiles)	55
Generator	3	Separate livestock housing	37
Battery (large e.g. car battery)	5	Water pump/treadle pump	1
Refrigerator	1		

In terms of structures/utilities owned, only a few households have running water or electricity in their homes. With respect to food security, only 15% have some type of improved grain/food storage facility, while 37% have separate housing for their livestock. Only 4% have a storage tank (of 500 litres or more) for domestic water. We see evidence of improved housing/roofing by 55% of households, which is typically one of the first investments rural households make when they have met their food and other basic needs. Just over one-third live in improved houses (e.g. of brick, concrete).

## 11.0 Conclusions and recommendations

Farm households in Hoima have obviously been adapting to the various social and environmental changes they have been exposed to over the last 10 years or so. It is interesting to see just what changes in farming practices these households have been making. New varieties of cassava, rice, banana, beans, peanuts, sweet potatoes, and maize have all been introduced.

The main reasons given for introducing new crop varieties included seeking higher yields, switching to better quality varieties, switching to earlier maturing varieties, and adopting drought tolerant varieties. New crops introduced reportedly due to perceived higher yields included cassava, beans, peanuts, banana, and rice.

The most significant changes in land management practices, measured by the cumulative percentages of households reporting the change on specific crops were, in order of importance: earlier planting, introduction of intercropping, introduction of crop rotations, earlier land preparation, expansion in area planted, and later planting. Most of these changes appear to be aimed at enhancing agriculture production/yields; there were very few changes targeting sustainable land management and ecosystem and environment protection (e.g. water and soil conservation measures such as composting, terracing, etc.). Storage structures for water for agriculture, including irrigation facilities, tanks for water harvesting, dams or water ponds, and boreholes were only mentioned by a handful of households. Thus soil and water management issues will loom large in this area in terms of needed adaptation strategies.

Three-quarters of respondents said they were planting or protecting trees on their farms, so some actions that contribute to mitigation of greenhouse gases are occurring. How and why this is happening, and can be further encouraged, needs to be further explored.

Food security is a major issue in Hoima – only one-third of households reported being food secure throughout the year. One-tenth of these families face food deficits for over six months per year. This is clearly an unacceptable level of food security for a relatively high rainfall area such as this. This baseline effort was not able to delve into the complexities of household food security – i.e. access, availability, affordability and utilization issues – but clearly a better understanding of these issues is needed.

Agricultural production strategies are quite diversified for most households, but almost half of them depend to some extent on working on other's farms for part of their income. And 7% are purely subsistence farmers that sell none of their agricultural output. Only one-fifth are arguably 'commercialized' farms.

Women play a critical role in food production in Hoima, and it appears that they are able to access weather-related information, although some households reported that only men received such information.

## **APPENDIX 1: Hoima District CCAFS team members**

Dr Drake N. Mubiru	Coordinator
Dr Christopher Bukenya	Supervisor
Vincent Barongo	Enumerator

## **APPENDIX 2: Villages selected**

The 10 km x 10 km block was chosen by the CCAFS team according to the established criteria. Within this block, all the villages were listed, and seven were chosen randomly. Within the seven villages, a list of all households was generated with the help of village authorities, and a total of 140 households were then randomly selected and visited.

The seven villages were:

1. Kyamongi
2. Kibaire
3. Nyakakonge
4. Katikara
5. Mparangasi
6. Kiranga
7. Kisinina