

TRANSFORMING AGRIFOOD SYSTEMS IN WEST AND CENTRAL AFRICA (TAFS-WCA)

# **Cocoa Rehabilitation and Establishment in Cocoa-Based Farming Systems in the Humid Forest Zones of West Africa**



**Reconnaissance Survey Report  
Prepared by**

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## Abbreviation

GAP	Good Agricultural Practices
IITA	International Institute of Tropical Agriculture
TAFS-WCA	Transforming agrifood systems in west and central africa
KKFU	Kuapa Kokoo Farmers Union

# Summary

The cocoa rehabilitation and establishment in cocoa-based farming systems in the humid forest zones of West Africa is part of the larger TAFS-WCA initiative that seeks to enhance access to quality, nutrient-dense seed, and climate-smart good agricultural practices (GAP) and reduced post-harvest losses and to see how these have a positive impact on food and nutrition and health security. Within the cocoa sector in West Africa, this initiative seeks to improve yields of cocoa and food crops and enhance the efficient growth of timber tree species to reduce the impact of cocoa production on forest and biodiversity.

The reconnaissance survey seeks to establish the current condition within the cocoa system in relation to the potential for rehabilitation of cocoa farms starting from the Ashanti and Ahafo regions of Ghana. Existing IITA partners in the cocoa sector in Ghana including Ofi, Cargill, Mondelez International, Barry Callebaut, Kuapa Kokoo and Rockwinds were engaged in this survey. Preliminary findings show that majority of farmers interviewed within the study areas have aged and diseased cocoa farms and are frustrated on rehabilitation due to two reasons: i) past failed attempts by similar initiatives and ii) the fear of losing income when cocoa farms are rehabilitated as cocoa economy is their mainstay.

Most cocoa farmers have shade trees on their farms, but the required quantity and quality needed for compatibility leaves much to be desired in the given agroecological zone. There is food sufficiency among the cocoa farmers and most have dedicated land for food crop cultivation. There were identified forests in the study area. Farmers with fallow lands seek to expand their cocoa farms and use part for food crop cultivation.

There is the need for farmers to rehabilitate their cocoa farms within the study area based on a preferred model that will ensure establishment of the farm and early income for farmers to encourage and promote a large scale rehabilitation process in the cocoa landscape. This will help to discourage extensification and promote intensification.

# 1. Introduction

The Transforming AgriFood Systems in West and Central Africa (TAFS-WCA) initiative of the OneCGIAR is an initiative which is focused on food and nutrition security and making agri-food systems more climate adapted in West and Central Africa. Overall, the Initiative seeks to enhance access to quality seed of nutrient-dense crop varieties climate-smart good agricultural practices (GAP), and technologies to reduce post-harvest losses, and to see how these have positive impacts on food, nutrition, and health security. TAFS-WCA aims to ensure that these help to improve adaptation to climate change and have positive impacts on poverty reduction, livelihoods, and job creation, especially for youth and women. The Initiative has a key focus on improving environmental health and biodiversity conservation while ensuring good governance of natural resources. The Initiative will also contribute to creating a socially inclusive platform for public and private partnerships (PPPs).

Cocoa based farming systems contributes substantially to the agricultural foreign earnings in West Africa, plays a major role in providing food for over 2 million households, and is also one of the most extensive production systems in the agrarian landscape covering about 4.3 million ha of arable land in Ghana, Cameroon, Côte d'Ivoire, and Nigeria. Reported average yield is low ranging between 200-700 kg per ha as against a potential yield of about 2,000 kg and more reported on research stations. The huge yield gap has been attributed to aging cocoa trees, poor cocoa planting materials, poor soil fertility management, prevalence of diseases and pests, old age of farmers coupled with an overall lack of knowledge on good agricultural practices. Consequently, farmers' have resulted in decades of migratory extensive cocoa farming that has contributed immensely to deforestation and biodiversity loss in the Upper Guinean rainforest, of which today less than 20% remains in West Africa.

Historically, smallholder cocoa and food crop farmers have grown the sector through expansion into new regions with abundant forest resources. This is no longer feasible as most of the West African Guinea rain forest has been replaced by agriculture. To conserve the remaining forest remnants while addressing social and economic demands for development and food security, while maintaining production the 70% production share on the world market countries like Côte d'Ivoire, Cameroon, Ghana, and Nigeria have over the past decades embarked on various interventions to help cocoa farmers to rehabilitate millions of hectares of old cocoa farms and establish new ones.

These activities have been carried out under governments' subsidies on planting materials for cocoa, food crops and timber species, and fertilizers on the assumption that potential productivity gains from these interventions will help increase yields and improve livelihoods. Despite all these interventions, productivity has not improved to the expected level and farmers keep expanding to new areas for increased cocoa production and food security.

To improve yields of cocoa and food crops including cassava, cocoyam, plantain, maize and vegetable as well as fruit and timber tree species to reduce the impact of cocoa production on forest and biodiversity, countries in West and Central Africa, it is essential that a new paradigm of growth be developed for the cocoa sector. While some progress has been made, the sustainability of this growth is being questioned and policy reforms are expected. In the cocoa-based system, The TAFS-WCA initiative plans to rehabilitate some 400 000 ha of old and diseased cocoa farms and establish 30 million timber tree species across the West Africa cocoa belt. The focus will be on replacing aged and diseased cocoa farms within this belt to improve productivity, increase income and also reduce the risk of the usual cocoa farm expansion hence deforestation among farmers. The project will be implemented by leveraging on the already existing partnership between the CGIAR centres and private and public partners in the cocoa system. The expectation is that cocoa farmers will make their farms available for this intervention while partners and the governments will support this important initiative

within the West Africa cocoa belt. Overall, the outcome of this rehabilitation project will provide a case study for scaling of subsequent technologies within the cocoa system.

## **2. Objective of the reconnaissance survey**

The survey was carried out in Ghana to identify partners and farmers qualified for rehabilitation of their aged and diseased cocoa farms. The aim is to profile a sample of these farmers for a first-hand knowledge of their condition and status vis-à-vis their aged and diseased farms, obtain their views on rehabilitation, and identify potential bottle necks.

## **3. Methodology**

### **3.1. Sampling method**

A purposive sampling method was used to leverage on IITA existing project partners. The study adopted the mixed method approach of survey where both qualitative and quantitative questions were asked to obtain relevant information from farmers. Project partners presented their respective communities and cocoa farmers that have aged and diseased cocoa farms to be interviewed as prospective beneficiaries of the initiative. In all, 494 cocoa farmers were interviewed. These farmers are directly associated with IITA project partners including Olam Food Ingredients (Ofi), Cargill, Mondelez International, Barry Callebaut, Kuapa Kokoo (KKFU) and Rockwinds/Transoyal. A two sectioned semi-structured questionnaire covering demographic/socio-economic variables, Land Use and reason for rehabilitation related questions was used during the interview.

**Table 1: Sampling frame**

Region	District	Number of Communities	Number of Farmers	Partners Present
Ashanti	Asante Akyim South	8	54	KKFU/Barry Callebaut
	Afigya Kwabre	3	23	KKFU/Barry Callebaut
	Adansi South	3	41	KKFU
	Ejisu Juabeng	3	10	KKFU
	Ahafo Ano South	15	110	KKFU / Barry Callebaut/Ofi
	Atwima Mponua	12	87	Cargill/ KKFU/ Barry Callebaut
	Amansie West	4	18	Mondelez International
	Amansie South	1	9	Mondelez International
	Bekwai	4	39	KKFU/Barry Callebaut
	Obuasi	1	25	KKFU
Ahafo	Asunafo North	12	58	KKFU/Barry Callebaut /Rock- winds
	Tano North	4	20	Barry Callebaut
	<b>12</b>	<b>70</b>	<b>494</b>	<b>6</b>

### 3.2. Study area

The survey was carried out in the Ashanti and Ahafo regions of Ghana. The Ashanti region falls between longitude 0 15 – 2 25 West and Latitude 5 50 – 7 40 North. The Ahafo region falls within Latitude 7.0000° N and Longitude 2.5396° W. These two regions are within the deciduous forest agro-ecological zone of Ghana where cocoa farmers are expected to intensify the implementation of good agricultural practices to obtain optimum yield. Cocoa farmers were interviewed in 12 districts and 70 communities across Ashanti and Ahafo regions (Fig 1).

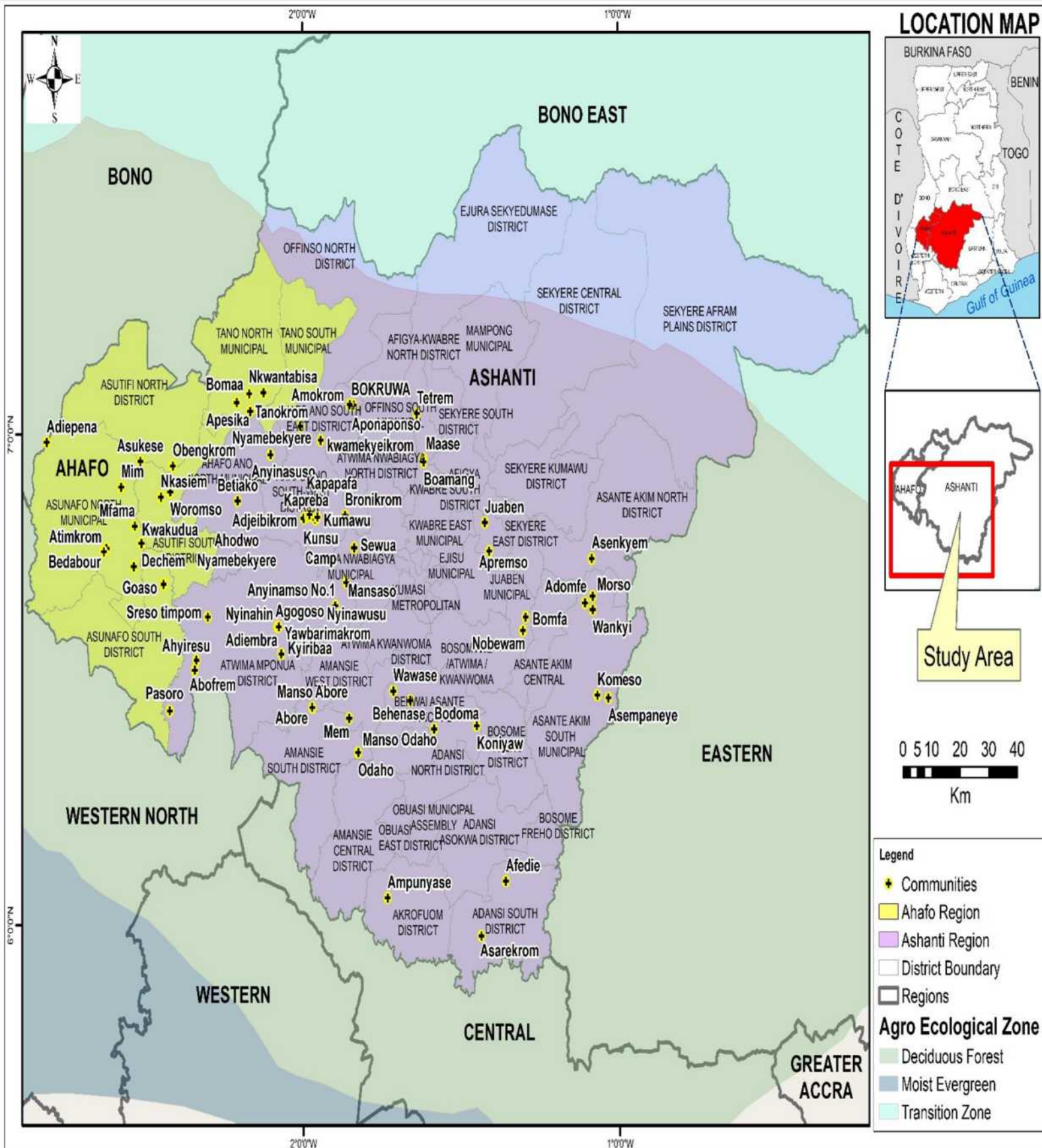


Figure 1: Map of study area



## 4. Results and discussion

### 4.1. Socio-economic characteristics of respondents

About 84% of respondents in the survey are from the Ashanti region. Majority of respondents are male (66%). In communities enumerated, 54% of farmers interviewed are natives of their respective communities with majority of them having at least Junior High School education (61%).

Table 2. Demographics of cocoa farmers in study area

Variable	Frequency	Percentage
<b>Region</b>		
Ahafo	80	16
Ashanti	414	84
<b>Total</b>	<b>494</b>	<b>100</b>
<b>Sex</b>		
Male	326	66
Female	168	34
<b>Total</b>	<b>494</b>	<b>100</b>
<b>Primary Occupation</b>		
Cocoa Farmer	466	94
Artisan	8	2
Trader	11	2
Government Worker	6	1
*Other economic activities	2	1
<b>Total</b>	<b>494</b>	<b>100</b>
<b>Status in Community</b>		
Native	268	54
Settler	226	46
<b>Total</b>	<b>494</b>	<b>100</b>
<b>Educational Level</b>		
None	132	27
Primary	61	12
Junior High School	217	44
Senior High School	59	12
Tertiary	24	5
<b>Total</b>	<b>494</b>	<b>100</b>

\*Okada riders, church leaders

The average farm size within the study area is 8.76 acres with majority (72%) of the farmers being owners of their farmlands. Averagely, farmers walk 2.36 km to their farms (Table 3).

## 4.2. Cocoa farm characteristics and rehabilitation decision

Table 3. Cocoa farm characteristics

Average farm size (Acre)	Minimum	Maximum
8.76	0.50	70.00
Average walking distance to farm(km)	Minimum	Maximum
2.36	0.50	45
Variable	Frequency	Percentage
Land Ownership type		
Own land	355	72
Sharecropping	138	28

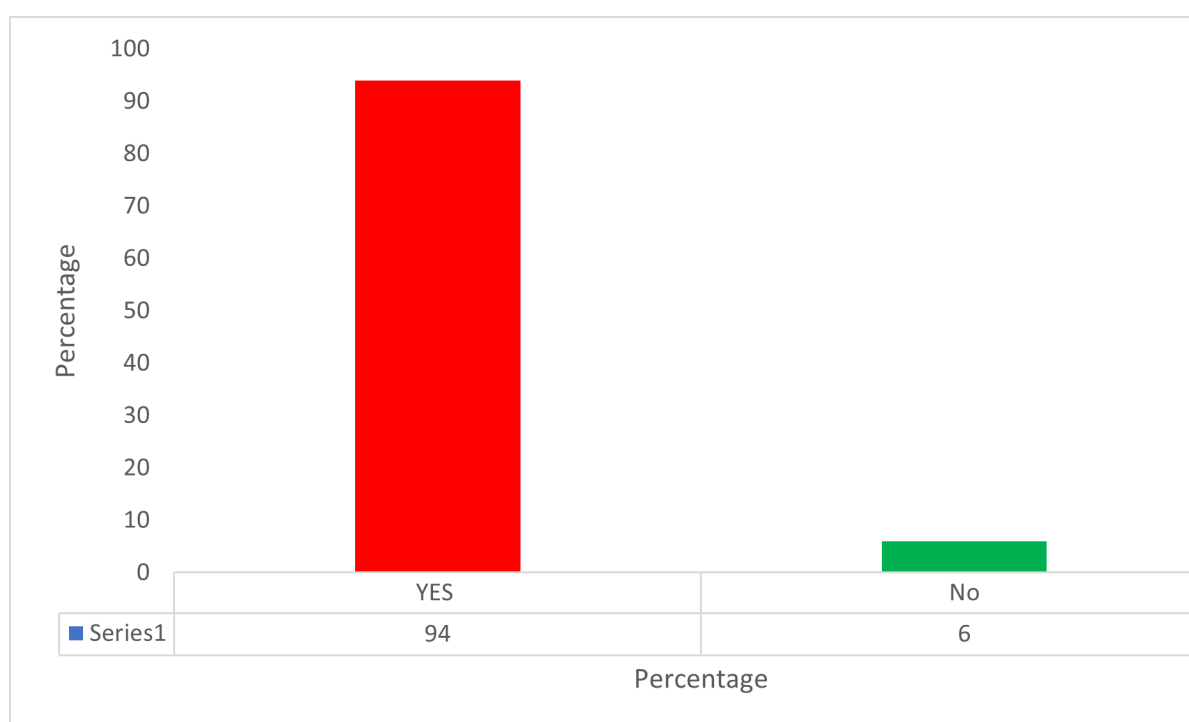


Figure 2: Low cocoa farm productivity observed for the past 5-10 years

Most farmers complained about the low productivity of their cocoa farms over the past 5 to 10 years (figure 2)

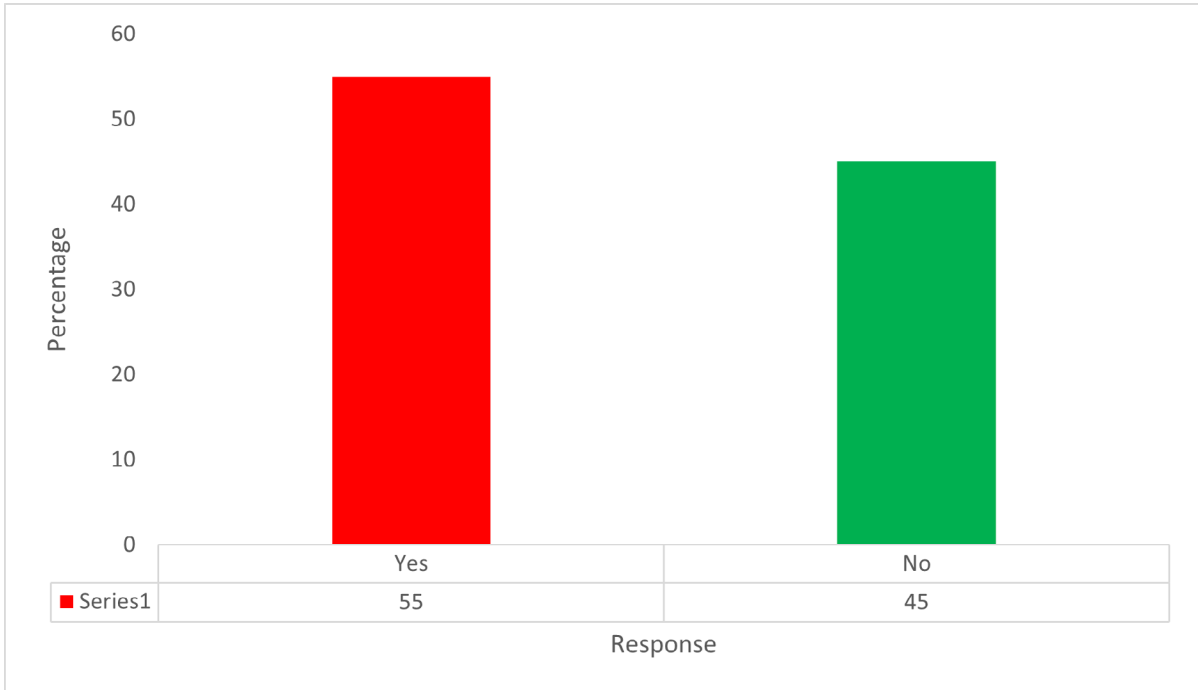


Figure 3: Presence of disease and pest on cocoa farm

Majority of the farmers alluded to the presence of disease and pest such as CSSVD, Blackpod, Mirids, Mistletoe attack on their farms (Figure 3).

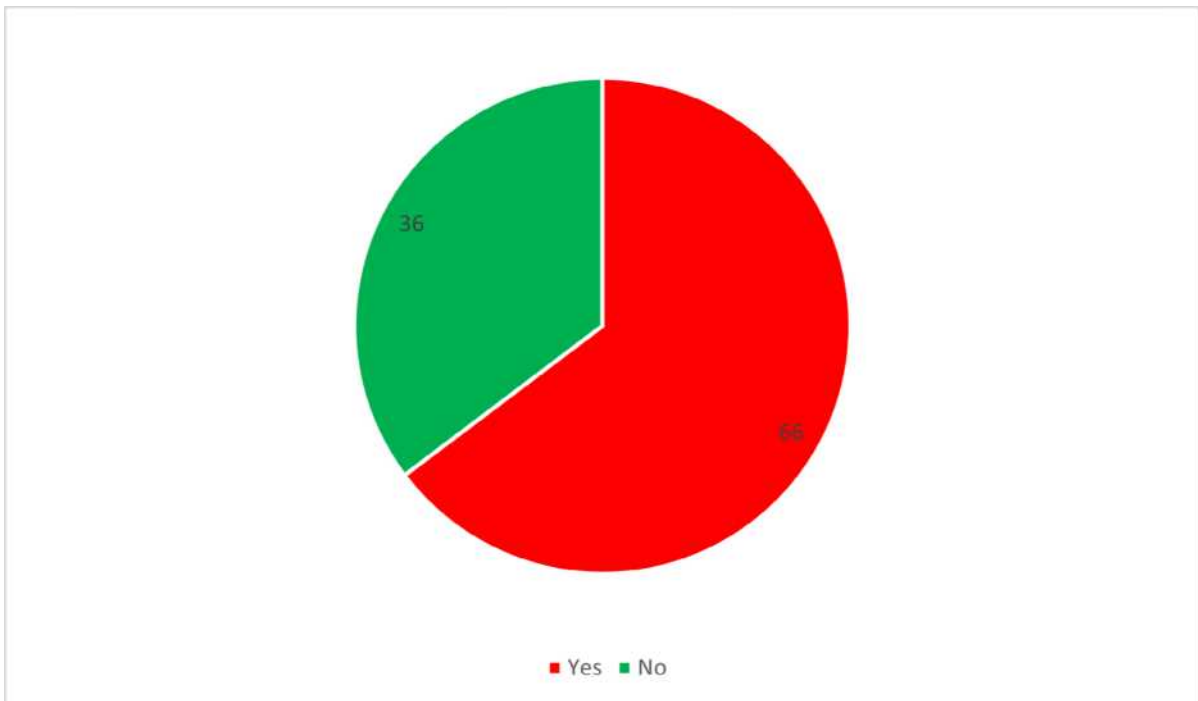


Figure 4: Aged Cocoa farm (>30 years)

Out of the 494 farmers interviewed, 66% of them have aged farms (>30 years) (Figure 4).

The average age of an aged cocoa farm is 42 years (Table 4). 92% of farmers interviewed agreed to rehabilitate their cocoa farms (Figure 5). The remaining 8% were reluctant because they have the fear of completely cutting down their cocoa trees, cocoa is the major source of income for their family, hence will suffer if cocoa trees are cut down, they also had a bad experience with earlier rehabilitation models implemented in the area, fear of losing their land from the owners due to new unfavourable contractual agreements. Even though the average farm size is 8.76 acres, farmers are willing to rehabilitate 3.77 acres on an average. In all, the farmers are willing to commit 1857.75 acres of their land to rehabilitation out of a total of 4317.61 acres available (Table 5).

Table 4. Aged Cocoa Farm

Average age of aged cocoa farm	Minimum Aged farm	Maximum Aged farm
42	30	90

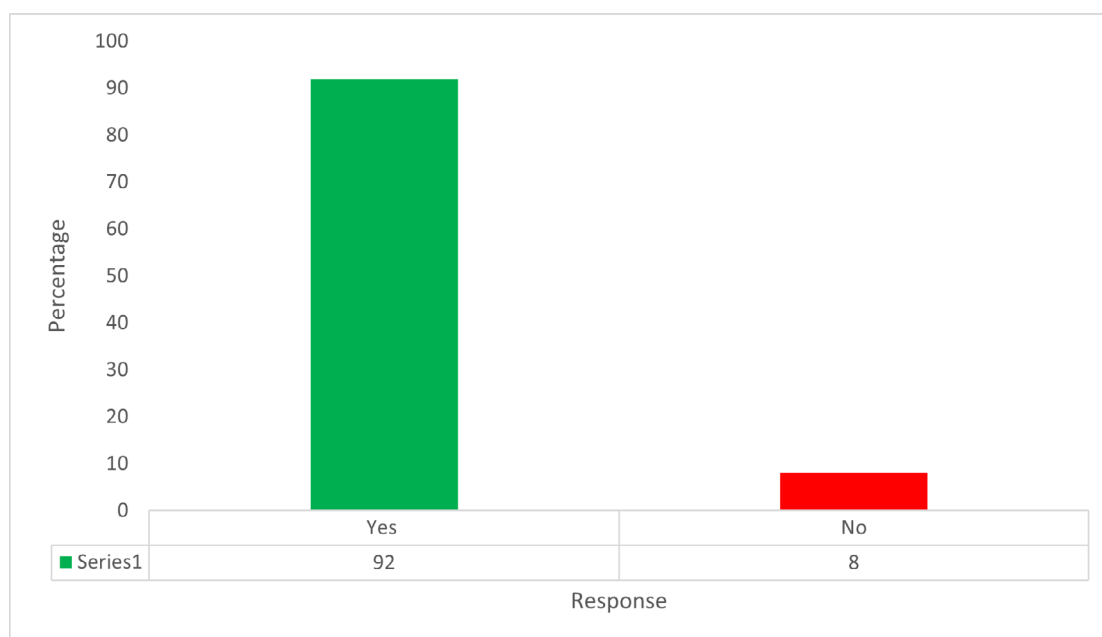


Figure 5: Decision to rehabilitate cocoa farm

Table 5. Rehabilitation

Average cocoa farm size(acres)	Average plot farmers are willing to rehabilitate (acres)	Minimum farm size farmers are willing to rehabilitate (acres)	Maximum farm size farmers are willing to	Total farm size committed to rehabilitation by farmers(acres)
8.76	3.77	0	45	1857.75

Most farmers (73%) responded to having shade on their cocoa farms (Figure 6), a further breakdown showed that an average farmer had 3 shade trees per acre even though the recommended amount is at least 9 per acre (Table 6). In Table 7, some common permanent shade trees used in the study area and common food crops cultivated by the farmers have been listed.

### 4.3. Shade Management

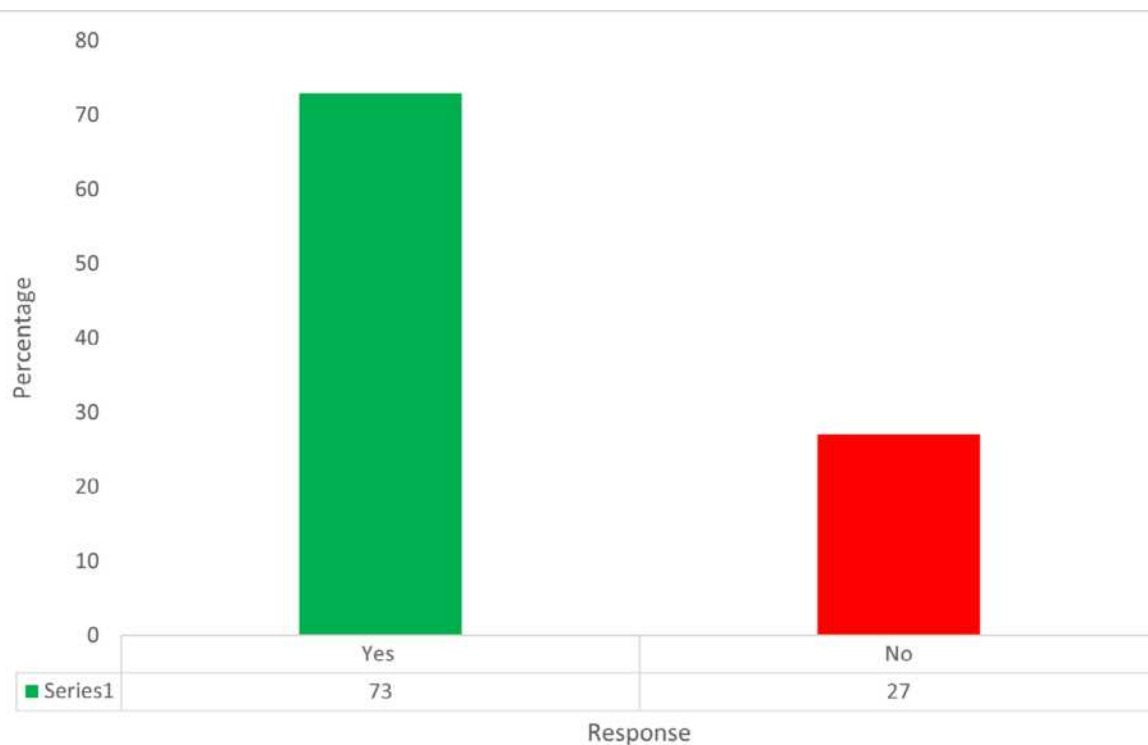


Figure 6. Presence of shade on cocoa farm

Table 6. Shade trees

Average number of shade trees on a farm	Minimum	Maximum	Average number of shade trees per acre
27	0	600	3

Table 7. Common shades and food crops cultivated by cocoa farmers in study area

Common permanent shade trees used by the farmers	Common food crops cultivated by the farmers
Emre	Cassava
Odum	Plantain
Funtum	Cocoyam
Nyankyre	Yam
Ngu ne ntsini	Maize
Kronkronma	Pepper
Sese	Tomato
Nyamedua	Garden egg
Oframo	
Mahogany	

#### 4.4. Food Security

Most cocoa farmers in the study area are food sufficient (71%) (Figure 7) and majority (65%) of them have a dedicated farm for food crops only (Figure 8).

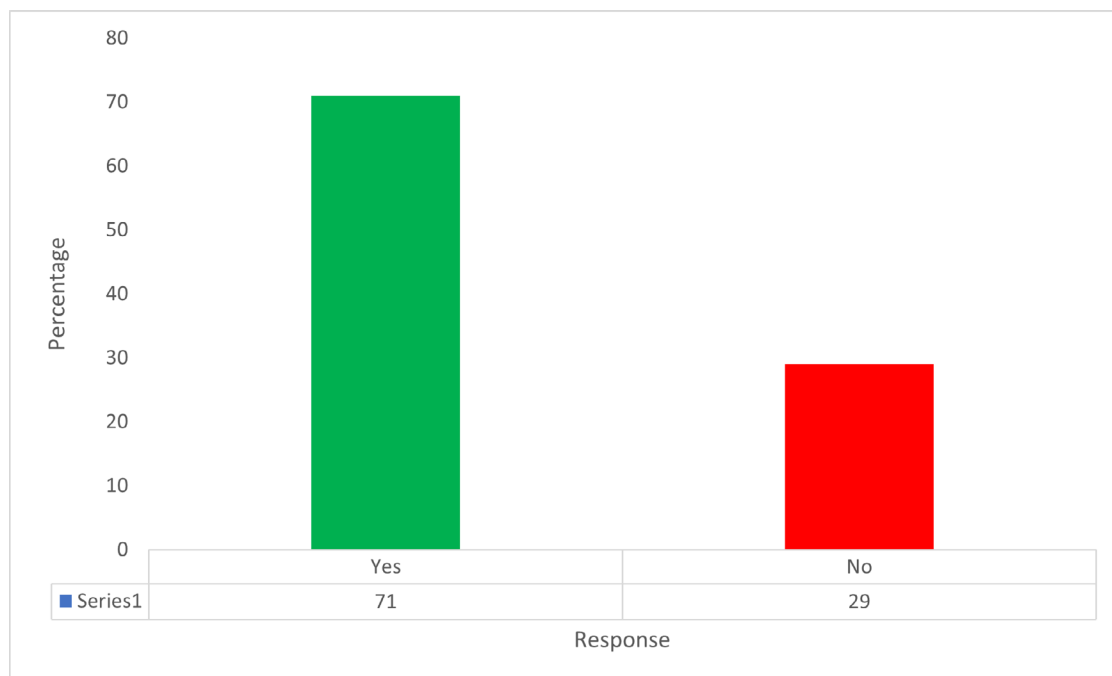


Figure 7. Food sufficiency from farm annually

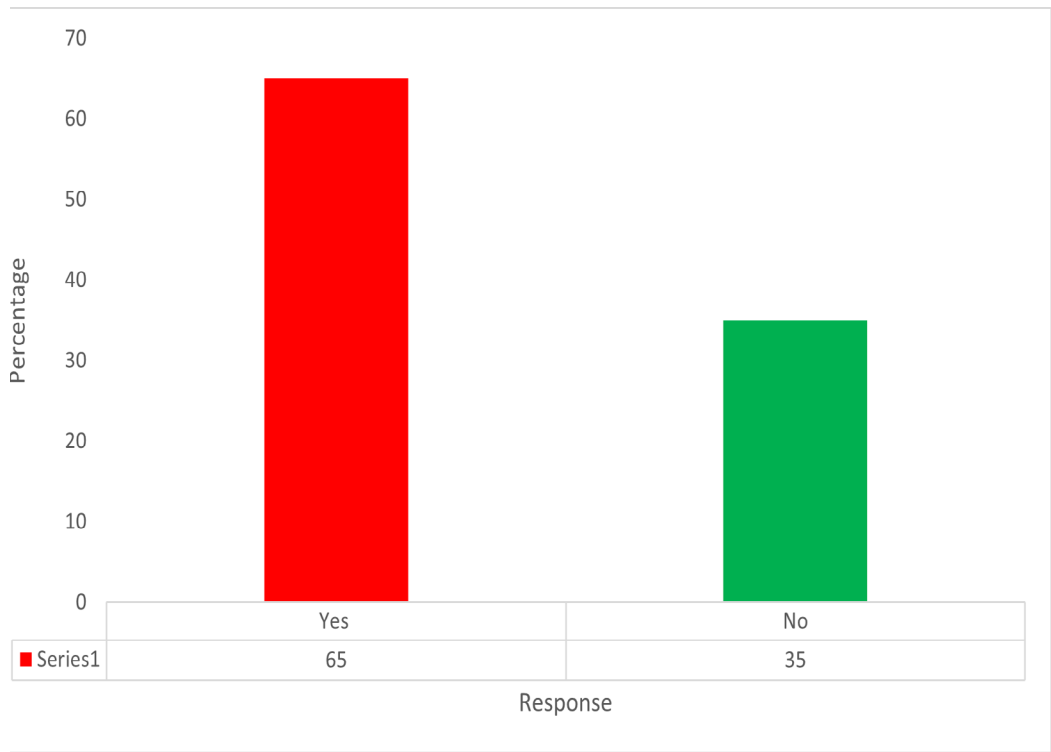


Figure 8: Dedicated land for food crops

#### 4.5. Off-farm income activities

Most farmers are not engaged in off-farm income activities (Figure 9), only 29% of them carry out off-farm income related activities such as trading, government work, artisanal works, driving, chainsaw operators and cocoa purchasing clerks. Cocoa farmers realize income ranging from GHS 3300 to GHS 17500 annually on an average from these off-farm income activities (Table 8).

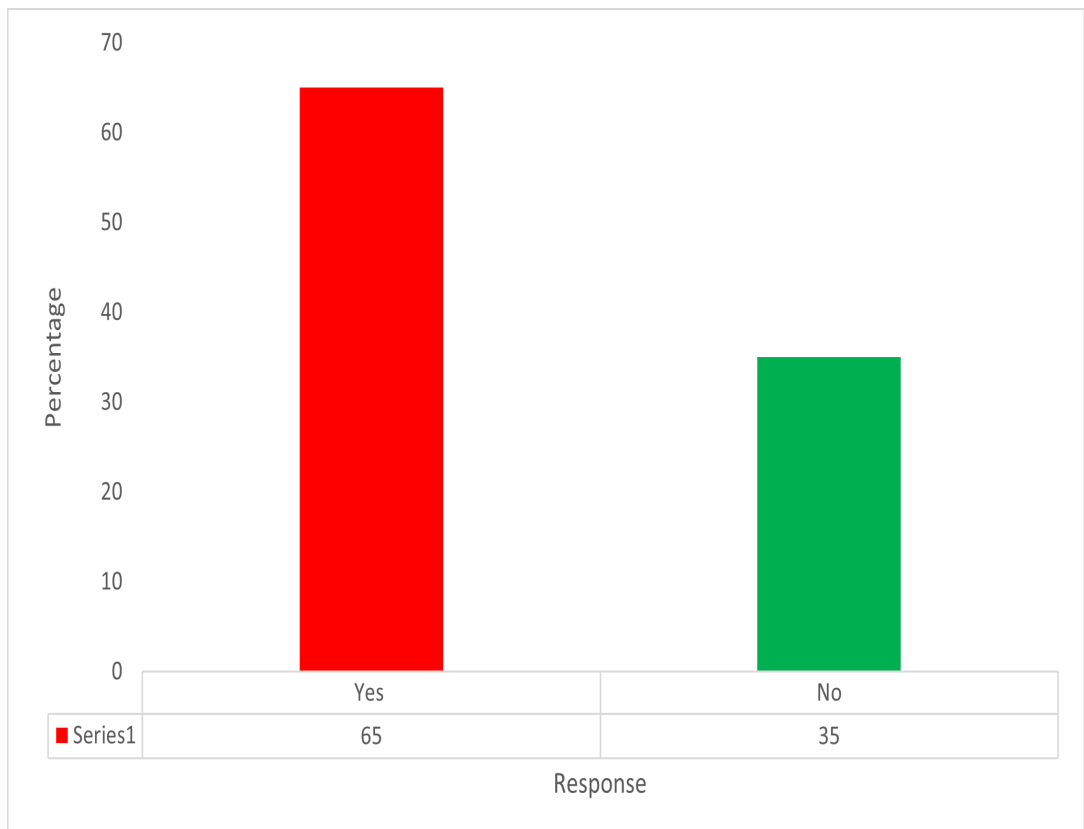


Figure 9. Off-farm income

Table 8. Off-farm income activities

Examples off-farm income activities cocoa farmers engage in	Average annual income obtained from off-farm annual income
Trading in general goods	GHS 3300
Government work e.g. Teaching	GHS 17500
Artisanal works e.g. Spraying, Mason, Electrician, Seamstress	GHS 9000
Chainsaw operator	GHS 15000
Driving	GHS 4000
Cocoa Purchasing Clerk	GHS 16900

**4.6. Forest Land**

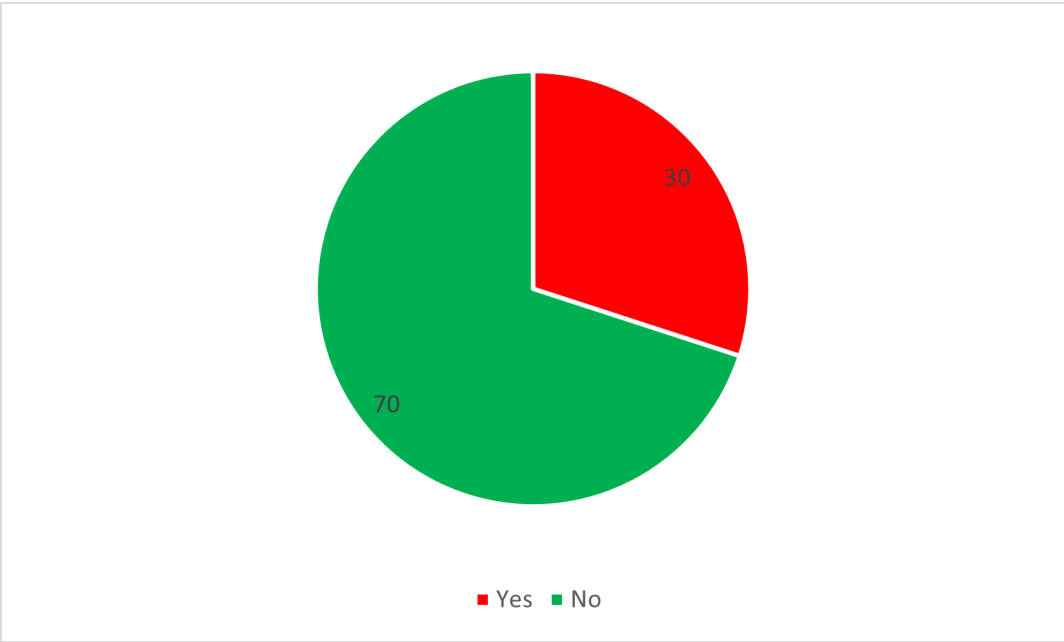


Figure 10: Presence of forest in community

Most communities do not have designated forest within their catchments (Figure 10). Only 30% of communities enumerated had forests within its enclave. A list of notable forests is listed below in Table 9.



Table 9. Forest within study area

Identified Forest within communities surveyed in Ashanti Region	Identified Forest within communities surveyed in Ahafo Region
Aborfour	Npaaho
Tetrem	Mpam
Numia	Nyamekyefrom
Enimye	Santaso
Linemu	Ayum
Monsa	Atonie
Apaprama	Montwi
Gyinereso	Apalepy
Ankam	Nsuapem
	Bosmkesei

Majority of farmers interviewed do not have fallow lands (Figure 11). Out of the 40% who have fallow lands, 63% of them want to use it to cultivate cocoa and about 32% of them want to use it to cultivate food crops. This means majority of cocoa farmers have plans of converting fallow lands for agricultural activities.

#### 4.7. Fallow Land

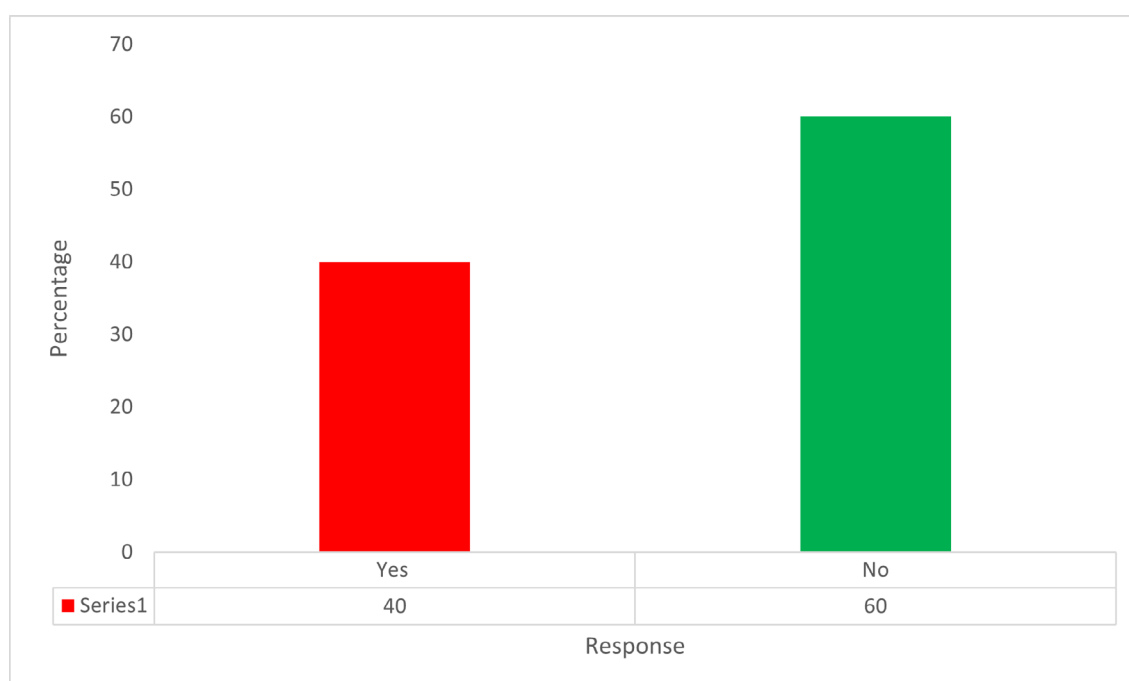


Figure 11. Possession of fallow land by farmer

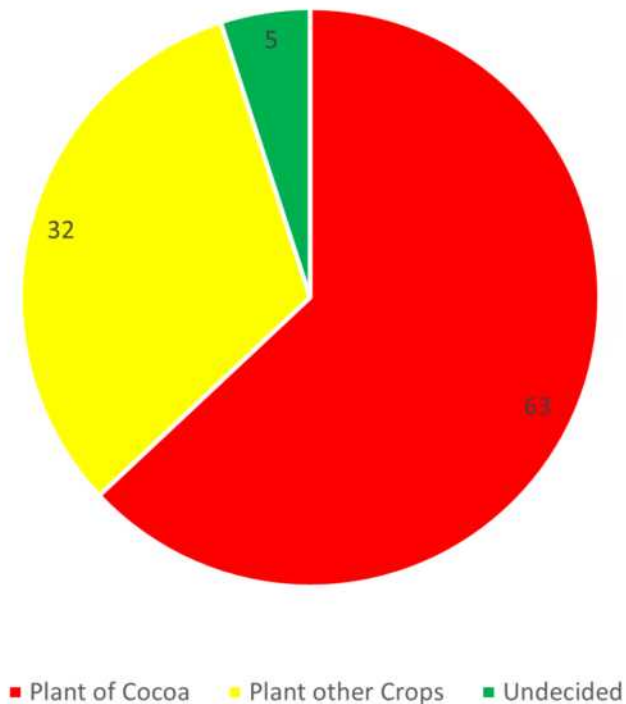


Figure 12. Farmers plan for fallow Land

## 5. Conclusion

Majority of cocoa farms in the study area are old and diseased. Most farmers are willing to rehabilitate their farms. However, their willingness to rehabilitate is low because of bad experience with the previous model used by the government and the lack of resources to bridge the income gap when the cocoa trees are felled. There is agreement that productivity is low over the past 5 to 10 years. Most farmers have permanent shade trees on their cocoa farms however the suitability of the quantity and quality in terms of compatibility needs much to be desired. Majority of farmers interviewed are food sufficient and have dedicated farms for food crop only. However, few farmers are engaged in off-farm income activities. Some communities in the study area have nearby forest and most of the cocoa farmers do not have fallow lands. Cocoa farmers with available fallow lands want to commit it to cultivation of cocoa and food crops.

## **ANNEX 1: FIELD QUESTIONNAIRE**

**COCOA REHABILITATION AND ESTABLISHMENT IN COCOA-BASED FARMING SYSTEMS IN THE HUMID FOREST ZONES WEST AFRICA - RECONNAISSANCE SURVEY AND SITE SELECTION FOR COCOA REHABILITATION IN GHANA'**

Enumerator: Please read this statement to respondent:

Dear Sir/Madam,

We are conducting a reconnaissance survey to collect baseline information before starting the implementation of a cocoa rehabilitation and establishment project. Your responses to these questions will remain anonymous and will only be used for purposes of the research. Taking part in this study is voluntary and should you choose not to take part, there will be no consequence.

Consent

Does the respondent consent to provide information? Yes /\_\_/, No/\_\_/

NOTE:

**TOOL IS TO BE ADMINISTERED ON THE COCOA FARM TO FARMER TOGETHER WITH STUDY PARTNERS' REPRESENTATIVE**

No.	Question	Response
	<b>Section One: Demography</b>	
1	Name of farmer	
	Project partner farmer is affiliated to	1.Nestlé 2.Barry Callebaut 3.Cargill 4.Olam 5.Mondelez 6.Hershey 7.KKFU 8.Rockwinds
2	Sex of farmer	1.Male 2. Female
3	Region of farmer	1.Ashanti 2.Ahafo 3.Bono
4	District of farmer	1. Adansi South 2. Afigya Kwabre 3. Ahafo Ano South 4. Amansie West 5. Asante Akyim South 6. Asunafo North 7. Atwima Mponua 8. Bekwai 9. Dorma 10. Ejisu Juabeng 11. Obuasi 12. Offinso 13. Tano North
5	Community of farmer	.....
6.	GPS Coordinate of community	
7	Educational status of farmer	1. No formal education 2. Primary 3. J.H.S 4. S.H.S 5. Tertiary
8	Primary occupation of farmer	1.Cocoa farmer 2. Trader 3. Artisan 4. Government worker 5. Other(s)
9	Status in community	1. Native 2. Settler
10	Phone number of farmer	.....

Section Two: Land Use and Reason for Rehabilitation		
11	Land Ownership	1. Own land 2. Sharecropping (Abunu/Abusa) 3. Tenant
12	Total Land size (acres)(if measured)	.....
13	Are you experiencing low productivity on your cocoa farm over the past 5-10 years?	1. Yes 2. No
14	Do you have severe disease infestation on your farm? (note: Over 2/3 of cocoa farm)?	1. Yes 2. No
15	If Yes, what kind of disease	.....
16	Is your cocoa old? (note:>30 yrs)	1. Yes 2. No
17	What age is your cocoa farm?	
18	Will you want to rehabilitate your farm?	1. Yes 2. No
19	What size of the plot do you want to rehabilitate? (In acres)	
20	How far is your from from your homestead ? (km)	
21	Do you have shade trees on your cocoa farm?	1. Yes 2. No
22	If yes, approximately how many permanent shade trees do you have in your farm?	.....
23	If yes, which type of trees do you use for permanent shade on your farm?	.....
24	Which food crops do you cultivate within and outside your cocoa farm?	.....
25	Do you have sufficient food from this farm throughout the year?	1. Yes 2. No
26	Do you have a dedicated farm solely for food crops?	1. Yes 2. No
27	Are you engaged in off-farm income activities?	1. Yes 2. No
28	If yes, state these activities	.....
29	How much do you earn annually from your off-farm income activities	
30	Is there a forest nearby this community	1. Yes 2. No
31	If yes, State the name of this forest	
32	Do you have any fallow land?	1. Yes 2. No
33	If yes, What do you intend to do with this fallow land?	

**ANNEX 2: PICTURES OF FIELD ACTIVITIES**





