



Effect of Rainforest Alliance Certification Standard on Certified Smallholder Cocoa Farmers within the Cocoa Value Chain in Ghana

A case study on Certified Smallholder Cocoa farmers in Dunkwa - on - offin in the Upper Denkyira East Municipal Assembly of Ghana

ISAAC KWASI OFOE

Van Hall Larenstein University of Applied Sciences, Velp

The Netherlands

©Copyright Isaac Kwasi Ofoe,2021

All rights Reserved.

Effect of Rainforest Alliance Certification Standard on Certified Smallholder Cocoa Farmers within the Cocoa Value Chain in Ghana

A case study on Certified Smallholder Cocoa farmers in Dunkwa - on - offin in the Upper Denkyira East Municipal Assembly of Ghana.

A research Thesis

Submitted to Van Hall Larenstein University of Applied Sciences in Partial Fulfilment of the
Requirements for the award of a Degree of Master of Science in Agricultural Production Chain
Management, Forest Chains specialization

By

ISAAC KWASI OFOE

SUPERVISED BY: Albertien Kijne

Assessed by: Peter van der Meer

Van Hall Larenstein University of Applied Sciences, Velp

The Netherlands

September 2021

©Copyright Isaac Kwasi Ofoe, 2021

All rights Reserved.

ACKNOWLEDGEMENT

I am so much grateful to the Royal Netherlands Government through the Netherlands Fellowship Programme (NFP) for giving me the chance to follow postgraduate studies in Agricultural Production Chain Management (APCM) specializing in Forest Chains (FC). My Heartfelt gratitude goes to my supervisor, Kijne Albertien for her far-reaching and productive remarks throughout this research work. She spent quality time on the research work and had a unique involvement in the completion of this applied research work.

I am very much appreciative to my family, my wife, and my children for their tolerance and support during my stay in the Netherlands. Further, my deepest appreciation goes to my research assistant who assisted me with the field data collection because I could not go back home for the data collection due to the pandemic Covid-19.

I am very grateful to my organization Agriinnovation Consult for moral support and for permitting me to travel for further studies in the Netherlands. Also, I am grateful to the Government of Ghana. Besides, Meer, Peter van der was my assessor and Coach for the Forest Chains specialization. He made a precious contribution during the research and my stay in the Netherlands, and am most grateful to him. Finally, I extend my appreciation to Marco Verschuur, course coordinator for his efforts and guidance throughout the study period and all the lectures and staff members of the APCM master's Programme of Van Hall Larenstein University of Applied Sciences for their irreplaceable support.

May God bless everyone.

DEDICATION

To the Glory of God, I dedicate this thesis manuscript to the entire Ofoe Family, and my lovely children Nene Nartey Ofoe and Manye Narkie Ofoe, and to my wife for the encouragement and prayers throughout my studies in the Netherlands.

Table of Contents

ACKNOWLEDGEMENT	iii
DEDICATION	iv
ABSTRACT	ix
CHAPTER 1 INTRODUCTION	1
1.1 Background.....	1
1.2 Research Problem	2
1.3 Research Objective	3
1.4. Research Questions	3
1.4.1 Main Research Question	3
1.4.1.1 Sub Questions	3
1.5 Conceptual Framework.....	4
CHAPTER 2 LITERATURE REVIEW	5
2.1 Rainforest Alliance Certification	5
2.2 Licensed Buying Companies (LBCs) in Ghana	6
2.3 Reasons to Join Certification	6
2.4 Production Practices by Certified Farmers.....	7
2.5 Benefits of certification and Challenges.....	7
2.6 Production Practices Non- Certified Farmers.....	8
CHAPTER 3 METHODOLOGY	10
3.1 Study Area	10
3.2 Justification of Study Area.....	11
3.3 Data Collection	11
3.3.1 Focused Group Discussion.....	12
3.3.2 Semi-structured Interview.....	13
3.3.3 Questionnaire	14
3.4 Data Analysis	15
3.5 Limitations of the Research	15
CHAPTER 4 RESULTS	16
4.1 Gender and Age of Respondents from Questionnaire.....	16
4.2 Respondents Level of Education.....	17
4.3 Reasons for Joining Rainforest Alliance Certified	18
4.4 Change in Cocoa Production Practices.....	19

4.5 Benefits after Joining Rainforest Alliance Certified	21
4.6 Difference between Certified and Non-Certified Smallholder Cocoa Farmers	23
4.7 Reasons Certified Smallholder Farmers Complain about Insufficient Income	25
CHAPTER 5 DISCUSSION	27
5.1 Gender and Age of Respondents	27
5.2 Respondents Level of Education.....	27
5.3 Reasons for Joining Rainforest Alliance Certification	27
5.4 Change in Production Practices	28
5.5 Benefits of Joining Rainforest Alliance Certification.....	28
5.6 The difference Between Certified and Non certified Smallholder Cocoa Farmers	29
5.7 Reasons Certified Smallholder Farmers Complain about Insufficient Income	30
5.8 Constraints and Prospects of Rainforest Alliance Certification	30
CHAPTER 6 CONCLUSIONS.....	32
CHAPTER 7 APPLIED RECOMMENDATIONS	34
7.1 Recommendation for RA Certified.....	34
7.2 Recommendation for LBCs and RA Certified Farmers	34
References	35

List of Annex

Annex 1: Questionnaire for Certified Farmers.....	38
Annex 2: Interview Checklist.....	42
Annex 3: Themes and Category Table	44
Annex 4: Breakdown of Data Analysis Table.....	45
Annex 5: Transcribe of FGDs and Interviews	47

List of Figures

Figure 1: Conceptual Framework	4
Figure 2: Upper Denkyira East Municipal Map	11
Figure 3: Gender of SH farmers.....	16
Figure 4: Age distribution of SH farmers	17
Figure 5: Farmer's educational level	18
Figure 6: Reason for joining RA Certified.....	18
Figure 7: Cultivation practices before Certification	20
Figure 8: Cultivation Practices after joining RA Certified.....	21
Figure 9: Number of bags produced before Certification.....	22
Figure 10: Number of bags produced after Certification	23

Figure 11: In-kind premium of items received by farmers	24
Figure 12: In-cash premium of items received by farmers	25
Figure 13: Insufficient Income SH Farmers	26
Figure 14: SWOT analysis of RA Certified	31

List of Tables

Table 1: FGD and sub-questions breakdown	13
Table 2: structured interviews and research sub-questions.....	14

LIST OF ACRONYMS

Cocobod	Ghana Cocoa Board
FFS	Farmer Field Schools
GAP	Good Agricultural Practices
GEP	Good Environmental Practices
GES	Good Social Practices
GPHMP	Good Post Harvest Management Practices
IPM	Integrated Pest Management
LBC's	Licensed Buying Companies
PPE	Personal Protective Equipment
RA certified	Rainforest Alliance Certification
SH	Smallholder
UTZ	UTZ Certified

ABSTRACT

Rainforest Alliance Certified farmers complained about insufficient income after having been certified for more than 5 years. The research aimed at assessing the effect of the Rainforest Alliance Certification standard on certified smallholder cocoa farmers within the cocoa value chain in Ghana.

Data collection was done using secondary data from literature, and primary data through a survey administered to certified smallholder cocoa farmers, Focused Group Discussion with both certified and non-certified smallholder cocoa farmers, and a semi-structured interview with key informants. All respondents were selected through a purposive sampling method. 40 certified smallholder cocoa farmers from Adwumam, Denyasi, Denkyira Akropong, Amissahkrom villages, 2 non-certified smallholder farmer groups from Boabinso village, 3 key informants from LBCs, and 3 key informants from Cocoa Health and Extension Division from the Upper Denkyira East Municipal assembly were selected.

The quantitative analysis of the data about the research involved the use of frequencies and percentages generated from IBM SPSS Software version 26. The qualitative analysis involved the categorization of topics, coding, themes, and category. The analytical tool used to present the findings of the strength and weaknesses of Rainforest Alliance Certification was the Swot matrix.

It was found certified smallholder cocoa farmers decided to join RA certified to obtain both in-cash and in-kind premium, acquire certification knowledge to improve their production practices to increase volumes and obtain inputs for production. Challenges certified farmers went through as the high cost of farm laborers, high cost of farm inputs, high cost of land for cocoa production, and over-dependency from family members for income. RA certified had a positive effect on certified farmers by increasing their production volumes, increased their income levels, and providing certification knowledge to farmers for sustainable production and improving their livelihood.

Key-words: (Rainforest Alliance, Certification, Certified Smallholder farmers, Non- certified farmers)

CHAPTER 1 INTRODUCTION

1.1 Background

The cocoa industry in Ghana is the country's economic backbone. Cocoa is a major contributor to GDP, a key source of foreign income, and a source of employment for hundreds of thousands of people in Ghana.

According to Fenger et al., (2016), on the global market, certified cocoa is becoming more popular today. An estimated 30% of global production is certified under UTZ Certified, Fairtrade International, or Rainforest Alliance, up from 3% in 2009. Mitiku et al., (2017), also state that in the food trade with developing countries, private sustainability standards are becoming more important.

According to Gockowski et al., (2013), Ghana as the second-largest global producer of cocoa, is strategically positioned on the world market. Consumer concerns over ethical and environmental issues associated with cocoa production are a potential threat to its position and these concerns have given rise to certification.

According to Cocoa Research Institute Of Ghana (CRIG, 2017), indeed cocoa production has been fundamental to Ghana's economy for a very long time and will likely continue to be a key player in development in the foreseeable years thus, any significant reduction in production will have a deleterious effect on Ghana's economy.

In Ghana, COCOBOD the main cocoa industry regulator has outsourced the internal marketing of cocoa beans to the Licensed Buying Companies (LBC's). As a result, the LBCs are mostly in charge of implementing the certification process through a pre-financing arrangement between LBCs and the off-takers (Iddrisu et.al, 2020).

Before cocoa certification was introduced, the government of Ghana at the end of the cocoa season paid additional income to cocoa farmers who sold their beans through the (LBC's) called a cocoa bonus and this has been a policy from the previous successive government till 2000.

The Sustainable Agriculture Network (SAN) – Rainforest Alliance certification system was founded in the 1980s and is considered one of the mainstream certification systems for tropical agriculture and forestry (Potts et al., 2014).

Group certification has also become increasingly relevant for the growth of SAN–Rainforest Alliance certification for coffee producers in Colombia and cocoa producers in Africa (Rainforest Alliance, 2013).

LBC's have introduced UTZ Certified now called Rainforest Alliance Certification to cocoa farmers to attract farmers for the LBC's to buy more cocoa beans from farmers. Besides, the standard supports farmers to be able to increase income levels through receiving high premiums. Due to certification, purchasing cocoa beans has taken a different dimension in Ghana. If the LBC is not involved in any certification standard it becomes very difficult to buy cocoa from farmers. Cocoa farmers have become conscious and before they sell out their beans to any LBC, the farmer asks the LBC, what is the farmer getting after selling cocoa to the LBC.

For more than five years in Ghana, about 70% of the total registered LBC's have purchased cocoa beans from farmers subjecting the farmers to the various certification standards. The most dominant certification standard used by the LBCs in Ghana was RA Certified. Before cocoa beans can be certified according to the Rainforest Alliance Certification standard, the cocoa farmer must be a registered farmer with a particular LBC and have signed a contract. Within the contract, it is agreed that a farmer will adhere to all the Rainforest Alliance certification requirements such as early harvesting, pruning, and removal of

chupons, regular weeding, observing integrated pest management principles and planting disease-free varieties of cocoa seedlings, and above all making sure that all the good agricultural practices are observed.

In addition, the farmer is trained according to the requirements of the Rainforest Alliance standard and agrees for his or her farm to be inspected both internally and externally to confirm that the farmer complies with the certification requirements. When the farmer passes the external Rainforest Alliance audit by complying with the mandatory and some selected additional control points within a particular certification year, it can be confirmed that the farm is certified and the beans can be sold to attract a premium from the first buyer of the beans.

The cash premium given to certified farmers ranges between 20ghc to 30ghc per 62.5kg of cocoa bag according to the agreement between the LBC and the farmer. In addition to the cash premium, in-kind premiums such as pesticides, fertilizers, shade tree seedlings, and hybrid cocoa seedlings are also given to farmers by the LBCs.

The RA Certified seeks to improve the livelihood of the certified farmers and promote environmental conservation in their cocoa production. It is assumed that cocoa farmers should be able to take the responsibility to increase their production in a well-controlled and sustainable process, even if cocoa farmers are no longer involved in the certification standard.

Certified farmers will obtain knowledge from the Rainforest Alliance certification standard, and shall improve their farming practices without destroying the environment. The farmers will promote environmental conservation through the planting of desirable shade trees, prevent hunting of endangered species, reduce bush burning, prevent deforestation, practice integrated pest management (IPM), and finally, observing good agricultural practices.

With the introduction of Rainforest Alliance Certification in Ghana, indiscriminate use of pesticides has reduced as certified cocoa farmers only use approved pesticides in their cocoa production and only use the pesticides when it is needed.

This process has also increased cocoa production as cocoa pollination is not disturbed with the use of pesticides that might kill all beneficial insects that support pollination. Certified smallholder farmers after practicing the RA standard must be able to increase their cocoa production and improve upon the welfare but certified farmers keep complaining about insufficient income from their cocoa production hence the research topic.

1.2 Research Problem

Rainforest Alliance Certification has been receiving complaints from certified smallholder cocoa farmers about insufficient income after having been certified for more than 5 years. One may ask what could be the cause of these complaints from certified smallholder cocoa farmers and to which extent has insufficient income become a major problem for certified farmers and how has it affected the farmers. Besides, as mentioned the standard does not only consider income as the main benefit of the certification standard but also comprises conserving the environment and promoting biodiversity for more sustainable cocoa production. To be able to arrive at a justifiable conclusion about the complaints, the knowledge about the Rainforest Alliance standard needs to be assessed to ascertain if certified smallholder farmers still understand the benefits, principles, or requirements of the standard.

Hence, Rainforest Alliance for an improvement in the certification system needs to research into evaluating the effect of the Rainforest Alliance Certification Standard on certified smallholder cocoa farmers who have been implementing the standard for more than 5 years. There is the need to identify exactly the root cause of the complaints and these can be achieved by assessing the standard for an

efficient and sustainable cocoa value chain. This research was commissioned by Rainforest Alliance because their mandate is to promote collective action for people and nature, ensuring the human rights aspects and improving sustainable livelihood opportunities for smallholder farmers and forest communities.

1.3 Research Objective

The objective was to assess the effects of Rainforest Alliance Certification on certified smallholder cocoa farmers within the cocoa value chain in Ghana and to formulate recommendations that will improve the certification standard.

1.4. Research Questions

1.4.1 Main Research Question

What is the effect of Rainforest Alliance Certification Standard on Certified Smallholder Cocoa Farmers for more than 5 years within the Upper Denkyira East Municipal District of Ghana?

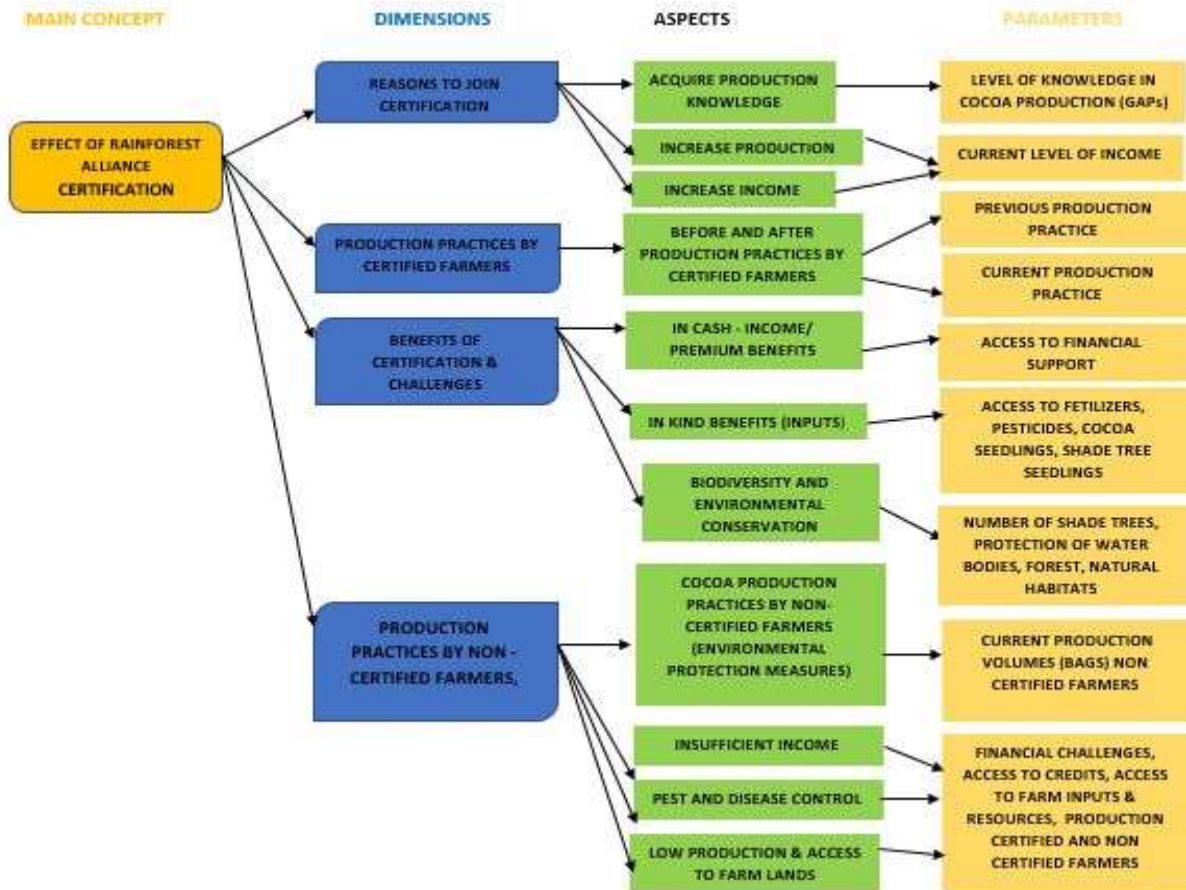
1.4.1.1 Sub Questions

- a) Why did Smallholder Cocoa Farmers decide to join the Rainforest Alliance Certification Standard?
- b) In what ways have the cocoa production practices changed since Rainforest Alliance certified farmers joined the Certification standard?
- c) What benefits and challenges have Certified Smallholder Cocoa Farmers attained after joining the Rainforest Alliance Certification Standard?
- d) In what ways do farming practices differ between Rainforest Alliance certified smallholder cocoa farmers and non-certified cocoa farmers?

1.5 Conceptual Framework

The conceptual framework explains the concepts of this research and the relationships between each concept.

Figure 1: Conceptual Framework



Source: Author Illustration (2021)

This conceptual framework explains the concepts of the research focusing on how the effect of Rainforest Alliance Certification can be assessed on certified smallholder cocoa farmers and the difference between certified and non-certified Rainforest Alliance farmers. In line with the research questions, the assessment was based on the following dimensions; why smallholder cocoa farmers decide to join Certification, changes in production practices by the certified farmers, benefits, and challenges of certification for certified farmers. The framework further looks into the concept of production practices of non-certified farmers focusing on GAPs and IPM measures.

CHAPTER 2 LITERATURE REVIEW

2.1 Rainforest Alliance Certification

According to Rainforest Alliance (2021), the Rainforest Alliance seal promotes collective action for people and nature. It amplifies and reinforces the beneficial impacts of responsible choices, from farms and forests to the supermarket check-out. Therefore certified smallholder cocoa farmers need to cultivate their cocoa farms in a sustainable process without destroying the environment with their production practices.

The same author states that the standard focuses on the forest which promotes best practices for protecting standing forests, fostering the health of trees, soils, and waterways; and protecting native forests. Besides, it is focused on climate which promotes responsible land management methods that increase carbon storage while avoiding deforestation. The standard prohibits destroying the natural forest to increase production through cutting down of trees by disturbing the ecosystem and even cultivating close reserved areas. Farmers hunting bush animals by the setting of traps and the use of guns are not allowed to join the standard and cannot be certified as well. Bush burning as a means to clear land for cultivation is also highly prohibited simply because soil micro and macro organisms are destroyed.

In the Rainforest-Alliance certification, the standard looks at the human rights aspect and provides a guarantee against human rights abuses. The rights of humans cannot be violated by forcing a worker to work more than mandatory working hours stated by a country's labor laws. The standard and assurance systems provide robust strategies for assessing and addressing child labor, forced labor, poor working conditions, low wages, gender inequality, and the violation of Indigenous land rights. Children under eighteen (18) years cannot be contracted to do any kind of work and are not forced to do any kind of work that might affect their physical and mental health. Workers should not be subjected to poor working conditions such as working overtime and not paid accordingly but should be given the exact wages needed. There should not be any incidence of discrimination among gender but everyone must be treated the same. According to Rainforest Alliance (2021), independent studies demonstrate that workers on certified farms are more likely to have better working conditions, use of personal protective gear, and keeping to labor protections.

According to Maguire-Rajpaul et al., (2020), to gain RA certification, farmers must comply with principles and criteria developed by the Sustainable Agriculture Network (SAN). Most RA/SAN agricultural information is concerned with best management practices (BMPs) to bolster crop productivity, but with an emphasis on shade trees, water conservation, and avoiding contamination of water courses.

According to Dompheh et al., (2021), certification standards are one of the most prominent of such efforts and entail the adoption of environmentally and socially responsible production practices to improve the sustainability of production. Fairtrade has now been overtaken by these other standards, as illustrated by the sharp rise since 2011 in UTZ and RA cocoa certification relative to Fairtrade (Krauss and Barrientos, 2021).

According to DeFries et al., (2017), over the last several decades, voluntary certification programs have become a key approach to promote sustainable supply chains for agricultural commodities. These programs provide premiums and other benefits to producers for adhering to environmental and labor practices established by the certifying entities. DeFries et al., mentioned coffee, cocoa, and other export-oriented, tropical crops are a particular focus for certification programs. The focus on these commodities arises for several reasons. State-level governance in the tropics in many instances does not prioritize sustainable production or is unable to implement effective environmental and labor regulations. This leaves open the possibility for non-governmental organizations and the private sector to develop markets

for certified products. Blackman and Rivera (2011) state that, specifically, they found that certification improves producers' productivity in Peru by a substantial amount, presumably by generating on-farm investment.

The same author said that certification has few direct economic benefits, such as higher producer prices or improved market access, and few direct environmental benefits, such as reduced deforestation or improved regeneration. According to Ansah et al., (2019) ideally, sustainability-oriented certification programs offer mutual benefits for all parties consumers, producers, and marketers. They offer consumers opportunities to use their purchasing power to support beneficial social and environmental practices in and around producer's communities.

Potts et al., (2014), state globally early certification programs were based on ecolabeling to distinguish products that excelled in terms of the environmental sustainability of their production. According to the same author in recent years, uptake of agricultural certification including schemes that are not principally focused on biodiversity has risen rapidly and now accounts for significant portions of tropical crops such as coffee (38% of global production), cocoa (22%), palm oil (15%), and tea (12%). DeFries et al., (2017), state the number of certification programs has multiplied over the last several decades and broadened to include criteria related to economic, social, and environmental sustainability. Certification programs generally use a multi-stakeholder process to establish general principles, supported by detailed guidelines and checklists of practices to achieve these principles. To be certified, producers are required to follow the guidelines and undergo a verification process carried out by auditors.

2.2 Licensed Buying Companies (LBCs) in Ghana

The major players in the cocoa value chain are farmers, licensed buying companies (LBCs), and Cocobod. AsankoInsight (2021) states, according to Cocobod, there are 46 LBCs in the market. These LBCs work with certified smallholder cocoa farmers and also buy cocoa from non-certified farmers in other districts where RA Certified is not practiced. Non-certified cocoa farmers are allowed to sell their cocoa beans to any of the other LBCs within their operational areas.

After LBCs have bought the cocoa beans from the farmers, all the cocoa beans either certified or non-certified are transported to the Government central warehouse under the supervision of Quality Company Limited and Cocoa Marketing company who are subsidiaries of the Ghana Cocoa Board. The beans are separated and not mixed for traceability and identification.

As reported by ICI (2017) 800,000 small-scale cocoa farmers in Ghana make up 60% of the country's agricultural base. Out of this about 25% of the farmers have been going through either RA certified, Fairtrade, or other different certification standards in Ghana. The rest of the 75% are non-certified farmers and sell their cocoa beans as conventional beans to LBCs who are not involved in any certification activities.

2.3 Reasons to Join Certification

According to Chaplin-Kramer et al., (2015), the vast majority of sustainability standards prescribe principles and criteria of production intended to achieve desired outcomes. But many of these criteria require extensive knowledge and expertise to be implemented, and the evidence base for their effectiveness at producing the desired outcomes has not been well substantiated.

Therefore certified smallholder farmers join certification to acquire adequate certification knowledge to be able to improve upon their farming practices and the Rainforest Alliance regulation supports the

farmers to acquire knowledge to be able to produce their cocoa with fewer production challenges. According to Abdulai et al., (2018) state that the Rainforest Alliance and UTZ certification projects promote shade maintenance and improvement of cocoa farm biological diversity. This information further justify why farmers decided to join certification because they will acquire more knowledge about shade management which will support their cocoa production.

2.4 Production Practices by Certified Farmers

Certified smallholder cocoa farmers try as much as possible to practice the requirements of the certification standard in the cocoa farms such as removal of disease branches to keep optimal tree health. Regular weeding at all times is observed to reduce competition of plant nutrients with weeds and farmers harvested the ripped cocoa on time to prevent over-ripening and weight loss of cocoa beans according to Ofoe (2021) field experience. Njimanted et al., (2020), said farmer's management practices have a positive and significant relationship with cocoa beans quality. Therefore farmer's behavior in adopting Good Agricultural Practices (GAP) and Good Post Harvest Management Practices (GPHMP) simultaneously ensures the production of quality cocoa because the quality process is a pre-requisite for certified cocoa beans. According to the same author, once an activity is not well carried out at the preceding stages of production, it becomes difficult to correct at successive stages in the production chain and affects the final quality of the bean available for sale. The Rainforest Alliance standard requires that certified farmers keep the required number of cocoa trees incorporated with the required number of desirable shade trees of about 6 to 9 in a one-acre farm.

Ghana Cocoa Board (Cocobod,2016) state that, it is recommended to plant 15 to 18 permanent shade trees per hectare. This shade tree supports the growth and production of cocoa pods. According to Deans, Ros-Tonen and Derkyi, (2017) certification programs mainly target better-off farmers. Changing their agricultural practices directly translates into positive productivity effects.

2.5 Benefits of certification and Challenges

Certified smallholder farms stand the chance of benefiting from the implementation of the standard through an increase in production by observing all the good agriculture practices and complying with the requirements of the standard. According to Aidoo and Wongnaa (2020), agricultural commodity certification refers to the adoption and compliance of the protocols of voluntary certification standards that cocoa produce meets economic, social, and environmental sustainability standards. Certification schemes seek to convey sustainability benefits to farmers by setting farm management protocols for producers and producer groups to comply with. It is expected that after full compliance with these protocols, farmer's welfare would be enhanced through increased yields, incomes, and better environmental services.

According to Cocobod Chief Executive Officer, Boahen Aidoo (2020) a 62.5kg bag of cocoa in Ghana is sold for 660 ghc as a selling price for farmers which is equivalent to 102 euros. Every cocoa farmer in Ghana receives this money when a bag is sold. Field experience by the researcher (Ofoe,2021) showed that at the end of the cocoa season, a premium of 20 ghc – 30 ghc per bag of cocoa is paid to the certified farmer based on the quantities of cocoa bags supplied to the licensed buying company.

Tscharntke et al., (2014), confirm that voluntary sustainability standards and certification offer a promising mechanism to mitigate the severe negative impacts on tropical biodiversity of agricultural expansion and intensification. The same author said from a conservation standpoint, certification of tropical agroforestry crops, especially coffee and cocoa, is of particular interest given the potentially high

biodiversity value of agroforestry systems and the substantial market penetration of coffee and cocoa certification in recent years.

Certified smallholder farmers plant desirable shade trees in their cocoa farms, protect water bodies without contaminating them with farm activities, apply pesticides at a specific time, and prevents hunting of animals. Field experience has shown that limited use of pesticides promotes pollination and increases pod formation from the agriculture extension agents.

Certified farmers face challenges of illegal gold mining in their farming communities. According to Kuwornu et al.,(2018), in Ghana, gold mining coincidentally takes place in rural communities where lands earmarked for gold mining are arable lands that farmers cultivate or have reserved for future use. Illegal timber loggers cut down desirable shade trees in certified cocoa farms which destroy some parts of the farms without the knowledge of the certified farmers. The trees are cut either on taboo days when farmers did not go to their farms or in the evenings when farmers already left their farms (Ofoe,2021).

According to Sonwa et al.,(2017), Cocoa farming systems in Africa are at the forefront of several development and conservation considerations that require attention with regards to management, both horizontally and vertically. These deforestation practices by the illegal loggers affect certified farmers in their cocoa production. The same author state that, gold mining, therefore reduces farmer access to their farmlands and degrades the environment where farmlands are located and these factors have the potential to affect the productivity of farmers.

2.6 Production Practices Non- Certified Farmers

Non-certified cocoa farmers generally do not consider all the good agricultural practices and maintaining the farms is not as efficient as compared to the certified smallholder farmers. Non-certified farmers were under no obligation to adhere to any certification requirements although they received extension services from Cocobod extension agents. Non-certified farmers always depend on the free government mass spraying program to spray their farms against pests that attacked the cocoa farms. Usually, the spraying exercise does not cover all farmers and some conventional farmers are not willing to purchase the approved pesticide to apply. Economically, the problems are centered on the low quality of the cocoa beans, which is generally caused by improper management at the farm level, limited knowledge of good agricultural practices (Wijaya et al., 2016).

According to Aneani et al., (2012), the government of Ghana intervened with national programs such as the Cocoa Diseases and Pests Control Programme (CODAPEC or mass spraying of cocoa farms) and the Cocoa High Technology Programme (Hi-tech) which provides free inputs and labor for the control of capsids and black pod (CODAPEC), and insecticides, fungicides and fertilizer (Hi-tech) to cocoa farmers on credit. This is because the spraying frequency of the CODAPEC program is inadequate and farmers are expected to do additional sprayings. Field experience by the researcher (Ofoe,2021), state, conventional farmers is of the view that it is the responsibility of the government to at all-time spray their farms free of charge and therefore they feel reluctant to buy the pesticides. Some conventional farmers used pesticides indiscriminately without observing the withdrawal periods because they do not know the importance of practicing IPM measures but only sprays whenever they want their farms to be sprayed.

Non-certified farmers that sell cocoa beans to their LBC's do not attract any additional income called the premium because their cocoa farms are not subjected to any certification practices by the LBCs. All kinds of shade trees are kept on the farm as it is known to the farmers that shade trees supported cocoa

production. Usually, there is lower production because of the neglect of farms and no proper management from farmers. Conventional cocoa farmers do not consider the necessity of increasing their production and producers do not ensure the improvement in management techniques whilst considering the increases in the size of their operation, endorsing the fact that organic farms which are relatively small in size compared to the conventional farms exhibit more return to scale Onumah et al., (2013)

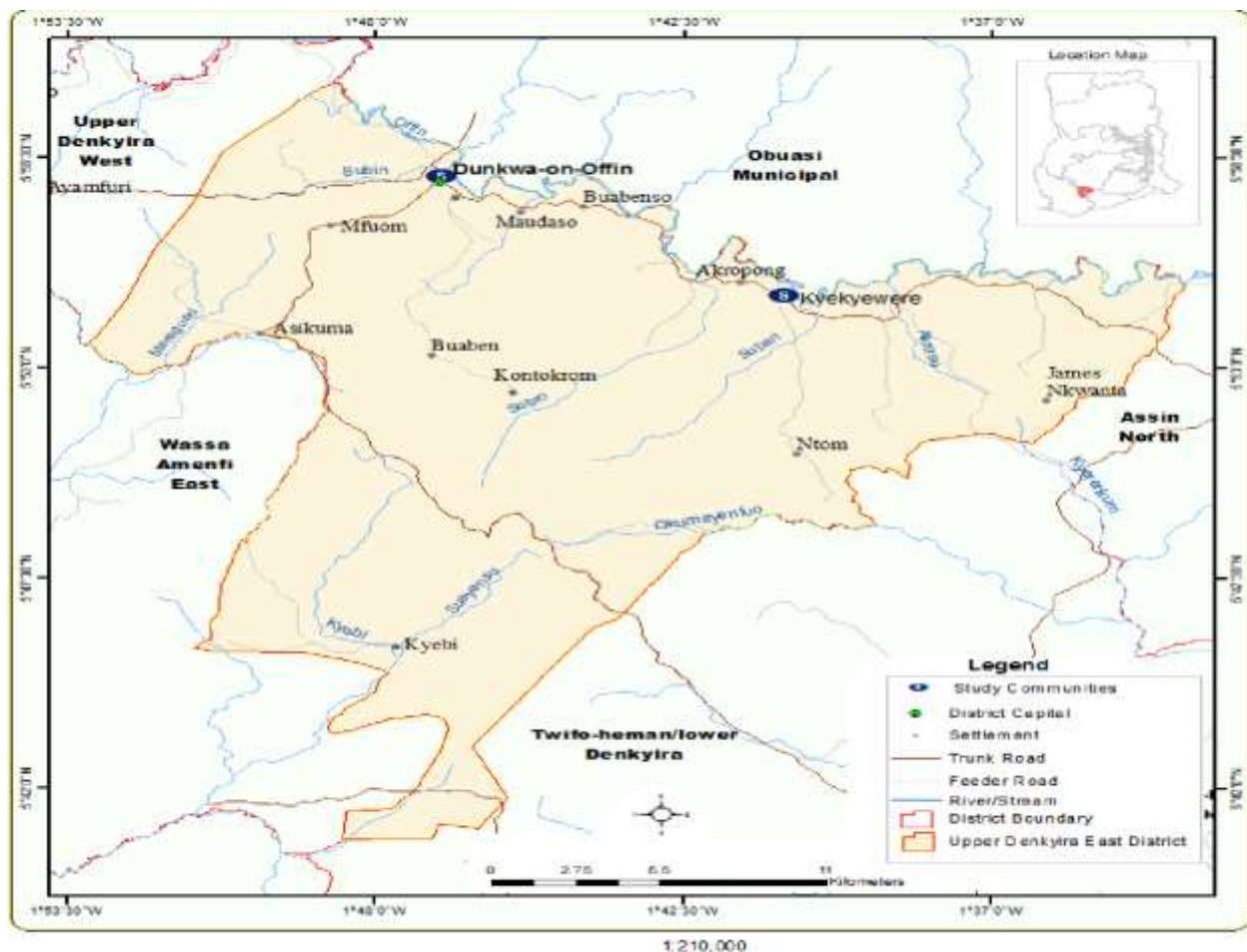
CHAPTER 3 METHODOLOGY

3.1 Study Area

This research was conducted in the Upper Denkyira East Municipality of Ghana particularly in a town called Dunkwa - on - offin. According to Ghana statistical service (2021), the Upper Denkyira East Municipal falls within the semi-deciduous forest zone. It consists of three layers which do not differ much from the rain forest. The trees in this forest zone do not shed all their leaves at the same time and are also not of the same species. Trees of the lower layer and some of the topmost layers stayed evergreen throughout the year and this is due to the generally moist condition of the area. Due to increasing cocoa and mining activities in the area, especially in the northern part of the Municipality, very little of the original forest is available and most of what was left are secondary forests. The forest contains various valuable timber species such as Mahogany and Wawa according to Ghana statistical service (2021).

According to Ghana statistical service (2021), the mean annual temperature in the Upper Denkyira East Municipality is 29°C in the hottest months and about 24°C in the coolest months. There are two rainfall seasons with total annual mean rainfall between 120cm and 220cm. The first rainy season is from May to June with the heaviest in June, while the second rainy season is from September to Mid-November. The main dry season is from late November to February. A total of 59.7 percent of households in the municipality are engaged in agriculture. Eighty-three percent of households in the rural localities of the municipality are agricultural households compared to 34.3 percent of households in the urban areas. Most households in the municipality (98.1%) are involved in crop farming. Poultry (chicken) is the dominant animal reared in the Municipal. Figure 2 below shows the municipal map of Upper Denkyira East.

Figure 2: Upper Denkyira East Municipal Map



source: semanticscholar.org

3.2 Justification of Study Area

Dunkwa-on-offin was selected for the research because smallholder cocoa farmers have been certified for more than 5 years. This justified the assessment of the effect of the Rainforest Alliance Certification Standard in this area since certified smallholder cocoa farmers also complained about insufficient income.

3.3 Data Collection

In the research three (3) data collection methods were used. The data collection methods were; Focused Group Discussion (FGD), Semi-structured interviews, and Questionnaires.

The FGD was conducted in 5 villages namely; Adwumam, Denyasi, Denkyira Akropong, Amissahkrom, and Boabinso. In these villages, both certified and non-certified cocoa farmers live. Five executives from each of the groups were chosen in the FGD to obtain information from.

A semi-structured interview was used to collect information from key informants. The key informants were (3) LBCs district managers from Eliho – Tuoton, AgroEcom Ghana, and Unicom. Two (2) Cocobod cocoa extension agents from the selected villages and lastly, the only district cocoa manager from Cocobod who supervised all cocoa-related activities within the district was also interviewed.

Finally, a questionnaire was administered to 40 certified smallholder cocoa farmers from Adwumam, Denyase, Denkyira Akropong, and Amissahkrom villages respectively.

3.3.1 Focused Group Discussion

A Focused Group Discussion (FGD) was used to collect information from four (4) certified smallholder cocoa farmer groups from the villages namely, Adwumam, Denyase, Denkyira Akropong, and Amissahkrom with the help of a research assistant on the field. Eliho – Touton LBC works with the selected villages called Adwumam and Denyase while villages Denkyira Akropong and Amissahkrom also worked with Unicom and AgroEcom Ghana LBCs respectively.

These four farmer groups were selected because the farmers live close to the villages mentioned above, and could be found in their villages for discussions. Moreover, the groups were certified for more than five years with the Rainforest Alliance Certification standard.

For every FGD conducted within the village, five executives were involved in the discussions. The executives are comprised of the chairman, vice-chairman, secretary, financial secretary, or treasure and organizer. The executives are made up of both males and females who are all based within the village. This FGD was done with only the group's executives who were also certified smallholder cocoa farmers.

The executives of the certified groups were not involved in the administering of the questionnaire. The FGD method was selected because certified smallholder farmers could collectively think about changes the farmers wanted to see. The method of sample used was purposive sampling as only the executives were used for the FGD. The justification was because of covid – 19 restrictions, it was not allowed to meet a large number of people.

Two non-certified groups namely, Amaniapong and Aboso cooperatives from Boabinso village were selected to be able to compare the difference in cocoa production between certified farmers and non-certified farmers within the study area as well as establishing the challenges both certified and non-certified farmers go through in their farming practices. Within the non-certified groups, five executives were selected from the two groups.

Table 1 below gives an illustration of FGD for certified and non – certified farmers in respect to addressing the sub-research questions.

Table 1: FGD and sub-questions breakdown

FGD – CERTIFIED GROUPS	SUB RESEARCH QUESTIONS – 1.4.1.1
<p>Adwumem, Denyasi group from Eliho – Touton licensed buying company, Denkyira Akronpong and Amissahkrom group from Unicom and AgroEcom licensed buying company.</p> <p>The total number of executives for the FGDs was 20 members as each group had five executives comprising both males and females. The FGD was done at the respective villages and not as one large group discussion.</p>	<p>a) Why did Smallholder Cocoa Farmers decide to join the Rainforest Alliance Certification Standard?</p> <p>b) In what ways have the cocoa production practices changed since Rainforest Alliance certified farmers joined the Certification standard?</p> <p>c) What benefits have Certified Smallholder Cocoa Farmers attained after joining the Rainforest Alliance Certification Standard?</p>
FGD – NON - CERTIFIED GROUPS	RESEARCH QUESTIONS – 1.4.1.1
<p>Amaniapong cooperative and Aboso cooperative.</p> <p>In total 10 non-certified executives had FGD in the same village called Boabinso, but with two different cooperatives.</p>	<p>d) In what ways do farming practices differ between Rainforest Alliance certified smallholder cocoa farmers and non-certified cocoa farmers?</p>

Source: Author (2021)

3.3.2 Semi-structured Interview

The key informants were interviewed as shown in the table below. The interviews were based on the interview checklists in annexes 2.3 etc. that provided further information to answer research sub-questions. Table 2 below gives an illustration of key informant's interviews in respect to addressing the sub-research questions.

Table 2: structured interviews and research sub-questions

KEY INFORMANTS	SUB RESEARCH QUESTION (a) Reasons of SH Farmers to join RA Certified	SUB RESEARCH QUESTION (b) Change in Production practices since farmers joined RA Certified	SUB RESEARCH QUESTION (c) Benefits SH farmers attained after joining RA Certified	MAIN RESEARCH QUESTION (d) The difference in farming practices between certified and non-certified farmers.
Three (3) Key informants, who are district cocoa buying managers, one from each licensed buying company being Eliho – Touton, Unicom, and AgroEcom were selected for a better triangulation since they have been involved in Rainforest Alliance Certification for more than 5 years and could also give credible information.	X	X	x	
In total two Cocobod extension agents from the selected villages were interviewed. These were the only extension agents available.	X	X	X	X
Dunkwa-on-offin district cocoa officer. Every cocoa district has only one manager and therefore it was not possible to select.	X	X	X	

Source: Author (2021)

3.3.3 Questionnaire

Questionnaires were used to acquire information from 40 certified smallholder cocoa farmers from the 4 farmer groups namely Adwumam, Denyasi, Denkyira Akropong, and Amissahkrom (i.e.) 10 farmers from each group.

The questionnaire can be seen in Annex 1 and the set of questions in the questionnaire covered topics for all the research sub-questions. The research assistant assisted farmers who could not read and write by asking them the questionnaire questions and filling in the answers as required on their behalf.

Farmers selected for the questionnaire were not the same farmers selected for the FGD and the purpose was to obtain different views from the farmers. The 10 farmers selected were a mixture of males or females farmers who were available and could be seen on the group member register for each village regardless of their farm size. The selected farmers were involved in the certification group and were all certified with RA certified for 5 years and above.

3.4 Data Analysis

Quantitative data from the questionnaire was analyzed with SPSS to generate descriptive statistics such as means, modes, graphs, and charts to describe characteristics of respondents, why farmers decided to join Rainforest Alliance certification, cocoa production before certification and after certification. This was done to be able to assess the impact of rainforest alliance certification, including benefits farmers obtained after joining the Rainforest Alliance certification.

Qualitative data from the Focused Group Discussion and the key informant's interviews were analyzed by breaking down data into themes and categories using the core process very well described by Laws et al., (2013; p.262-264). A table was used to summarize the important data from the interviews comparing how the data related to each other about the difference between certified farmers and non-certified farmers. The table can be seen in Annex3.

3.5 Limitations of the Research

Due to the pandemic Covid – 19 that hit the whole world, traveling back to my home country to carry out the research work became complicated with strict restrictions. Someone traveling from abroad needed to be in 14 days mandatory quarantine.

Another reason for not going back for the fieldwork was that electricity and internet in my home country were not as efficient in the Netherlands, therefore communication with my supervisor might be difficult and could hinder the progress of the research work.

Despite the limitations, the research needed to be carried out and therefore due to travel restrictions, I decided to stay in the Netherlands to conduct the research work with the help of a research assistant.

A reliable research assistant who was also an extension officer and knew the study area carried out the fieldwork. The research assistant was trained on the tools needed to conduct the fieldwork. The training was done through the team's app or zoom by the researcher and followed up by regular phone calls and WhatsApp calls for effective supervision when the field activities started.

Meeting a large number of farmers in a group was not permitted as farmers would not observe Covid- 19 rules about social distancing and regularly washing of hands and wearing of nose mask. The research assistant was able to organize the FGDs since farmers were in smaller groups and the research assistant was not traveling from abroad for the fieldwork.

CHAPTER 4 RESULTS

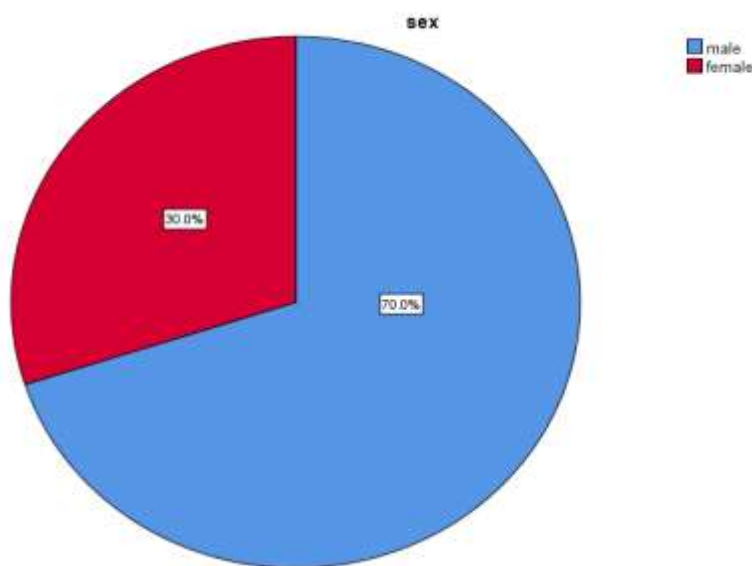
This chapter presents the findings of the research from the questionnaires, focused group discussions, and semi-structured interviews conducted from the data collection.

4.1 Gender and Age of Respondents from Questionnaire

Out of the 40 farmers sampled, 70% of farmers were males while 30% were females. About the profile of certified cocoa farmers and farm characteristics, the majority of the farmers are males. According to Kongor et al., (2017), the majority of cocoa farmers are males with women constituting the minority. Male dominance in cocoa farming was observed in all regions.

Figure 3 below illustrates the percentage range between males and females.

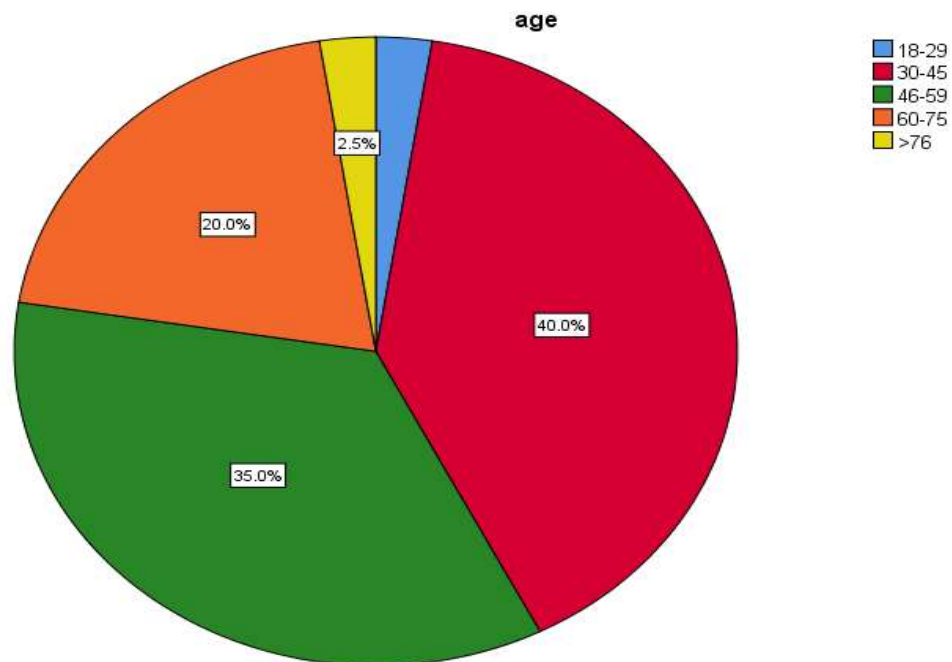
Figure 3: Gender of SH farmers



Source: Field Survey Data (2021)

40% of the farmers were between the ages of 30 to 45 years followed by 35% between the ages of 46 to 59 years. 20% of the farmers were between 60 to 75 years. Within the classification of age range, ages from 18 – 35 years are classified as youth, 36 – 60 years as Adult, and 61 years and above also classified as aged farmers. Therefore the majority of the certified smallholder cocoa farmers fall within the category of Adult cocoa farmers. Results from the survey also revealed that the majority of farmers are between 41 and 60 years old which confirms the findings of this research about the age demographic of farmers. Figure 4 below illustrates the age distribution of the sampled farmers.

Figure 4: Age distribution of SH farmers

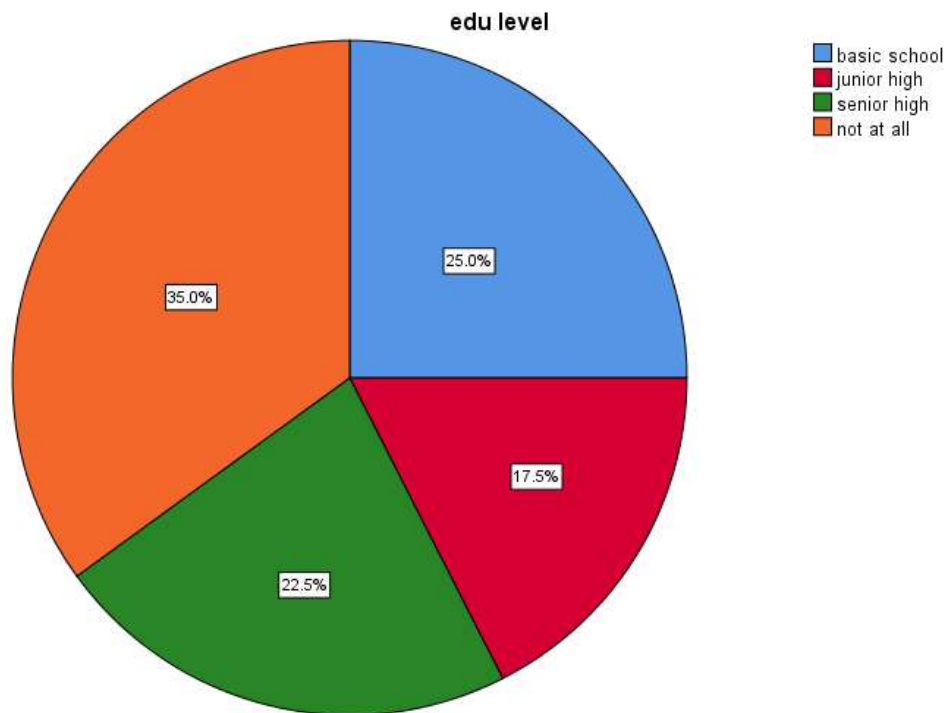


Source: Field Survey Data (2021)

4.2 Respondents Level of Education

Out of the 40 farmers, 35% have not had any education at all. 25% of farmers had basic education, 22.5% had their education to the senior high level of education, and 17.5% of the farmers at junior level. It can be seen from the findings that the majority of the certified cocoa farmers did not have any education. Figure 5 below shows the level of farmer's education.

Figure 5: Farmer's educational level

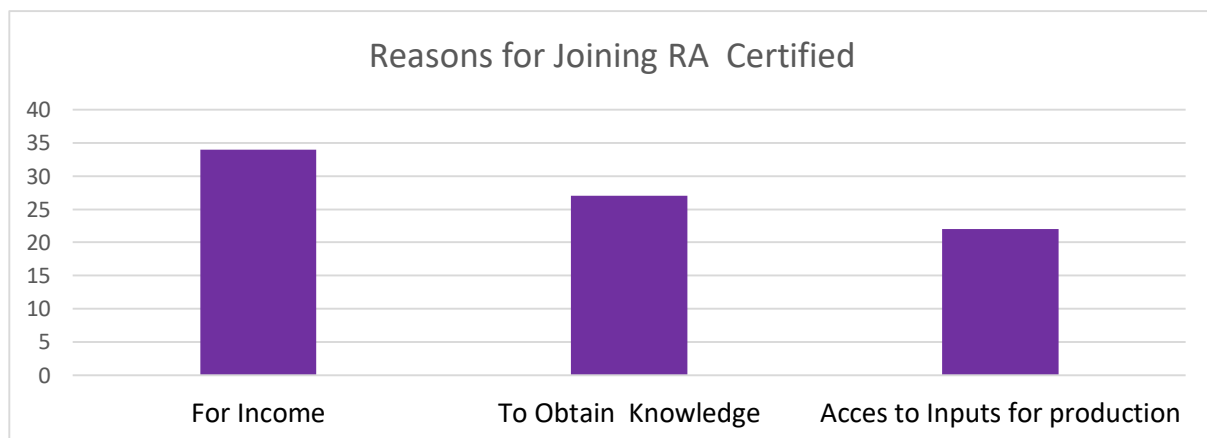


Source: Field Survey Data (2021)

4.3 Reasons for Joining Rainforest Alliance Certified

From the questionnaire out of 40 certified smallholder cocoa farmers, 34 decided to join the certification standard for income, 27 joined to obtain knowledge, and 22 joined to obtain cocoa inputs for production. Figure 6 below shows the reason why farmers decided to join RA certified.

Figure 6: Reason for joining RA Certified



Source: Field Survey Data (2021)

Information from the Focused Group Discussions with the executives of the certified groups, decided to join Rainforest Alliance certification because;

1. Farmers wanted to obtain premium
2. Produce quality cocoa beans according to Rainforest Alliance specification
3. To improve the livelihood of members by incorporating the management of other crops into their farming activities to obtain other sources of income
4. Joint procurement of inputs by negotiating more favorable prices when buying in bulk
5. To mediate disputes amongst members and others regarding any issues affecting cocoa farming
6. To obtain more knowledge about cocoa production in a sustainable process without destroying the environment.

The non-certified farmers from the Focused Group Discussions stated that they could not join the Rainforest Alliance certification because their LBCs were not involved in any certification activities about Rainforest Alliance. The farmers also said it is stressful to join any certification activity because the certification rules are too rigid and difficult to comply with. As a majority of the farmers are not educated it is difficult for them to understand the standard and put the requirements of the standard into practice.

According to the key informants from the managers of LBCs whose names remain anonymous, farmers decided to join the standard because farmers would obtain the profit of certification due to the increases in yield. Also, AgroEcom provides extension services to certified farmers through; Training on good agricultural practices, and good environmental practices, assistance in setting up the nursery to grow cocoa seedlings, provision of good quality and disease-free cocoa and shade tree seedlings, assisted in purchasing small equipment (cutlass, knapsack sprayer, wellington boots, pruners, etc), supplying of fertilizers and pesticides on credit, training for Ecom certified farmers on business skills set, access to boreholes that provided portable drinking water, and access to health care and education. Farmers also decided to join certification standards because the farmers would be internally inspected for continuous improvements according to the LBCs key informants. In addition, farmers decided to join RA certified because of the following reasons; I. Training and professionalization of the farmer's II. Improvement in yield III. Improvement in livelihood IV. Access to extension services V. Access to inputs from Eliho Touton service center.

According to Rijsbergen et al., (2016) the original Fairtrade proposition offered farmers guaranteed minimum prices and an additional premium for community-level investments. Fairtrade (FT) and Utz have triggered several developments in the Kenyan smallholder coffee sector. These include increased awareness of good agricultural practices, upgrading of processing practices, and attention for environmental concerns, improved working conditions, record keeping, traceability, and cooperative governance. All households manifested an improvement in their economic situation, but only FT/Utz - multi-certified households also registered an increase in their savings. This information further confirmed the information provided by the farmers and key informants.

4.4 Change in Cocoa Production Practices

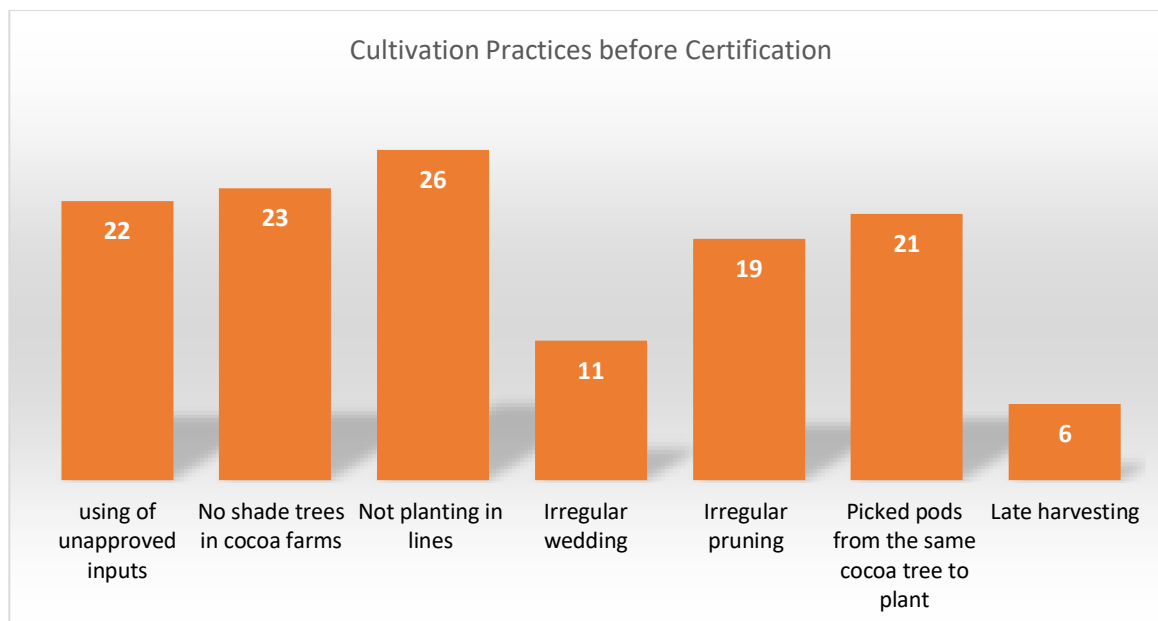
According to Gockowski et al., (2013) most certification standards concern adherence to good agricultural practices and provide training to producers on those practices. Based on the feedback from the respondents about cocoa production practices before and after joining the Rainforest Alliance certification, the graphs below showed the changes that occurred in the cocoa production practices.

The graph below (figure 7) showed that before farmers joined the Rainforest Alliance certification, they cultivated their cocoa farms without practicing good agriculture practices by

1. Using unapproved inputs
2. Cut down shade trees or No shade trees in cocoa farms
3. Not planting in lines
4. Irregular wedding
5. Irregular pruning
6. Picked pods from the same cocoa tree to plant
7. Late harvesting

Out of the 40 respondents, 26 farmers did not plant in lines, 23 did not have shade trees in their cocoa farms, 22 farmers used unapproved inputs to cultivate their cocoa farms, 21 farmers pick cocoa pods from the same trees which were diseased or unhealthy to replant, 19 farmers did not prune their farms regularly while 11 did not weed regularly and 6 of the farmers harvesting their cocoa pods late. The rest of the respondents also said that they also cultivated their cocoa farms without practicing any good agriculture practices but were interested in harvesting the cocoa pods if they mature. Figure 7 below shows an illustration of cultivation practices before certification.

Figure 7: Cultivation practices before Certification



Source: Field Survey Data (2021)

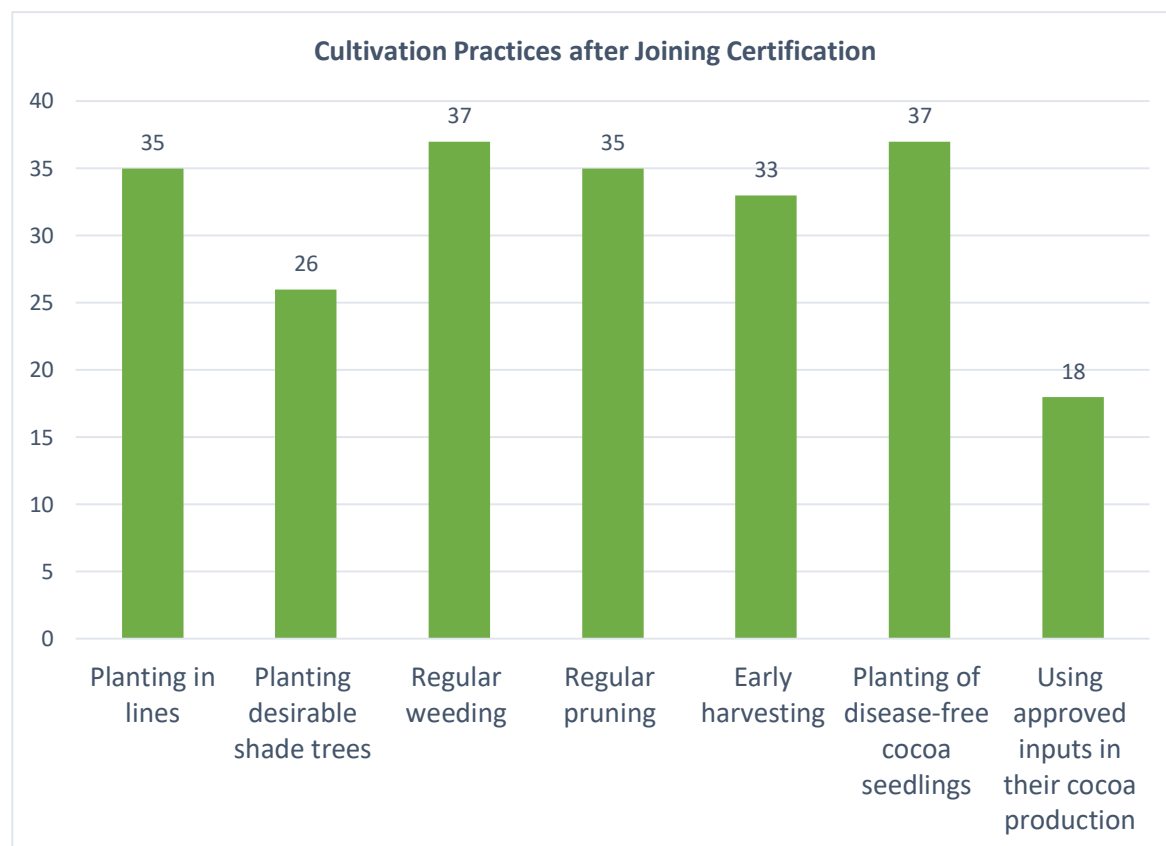
According to the 40 certified respondents from the questionnaire, they said that they have changed their cocoa production practices by

1. Planting in lines
2. Planting desirable shade trees

3. Regular weeding
4. Regular pruning
5. Early harvesting
6. Planting of disease-free cocoa seedlings
7. Using approved inputs in their cocoa production

Figure 8 below illustrates the change of production practices of certified farmers after joining the Rainforest Alliance certification.

Figure 8: Cultivation Practices after joining RA Certified



Source: Field Survey Data (2021)

4.5 Benefits after Joining Rainforest Alliance Certified

The benefits in terms of the quantity of cocoa bags produced by smallholder farmers obtained before and after joining the Rainforest Alliance certification. Before joining 15 respondents could produce 9 to 14 bags of cocoa bags. 9 respondents could also produce 15 – 20 bags with the rest of the farmers produced between 0 to 8 bags.

According to Iddrisu et al., (2020) state, agricultural commodity certification refers to the adoption and compliance of the protocols of voluntary certification standards to produce to meet economic, social, and environmental sustainability standards. Certification schemes seek to convey sustainability benefits to farmers by setting farm management protocols for producers and producer groups to comply and is expected that after full compliance with these protocols, farmers' welfare would be enhanced through increased yields, incomes, and better environmental services

Figure 9 below shows the number of cocoa bags farmers produced before certification.

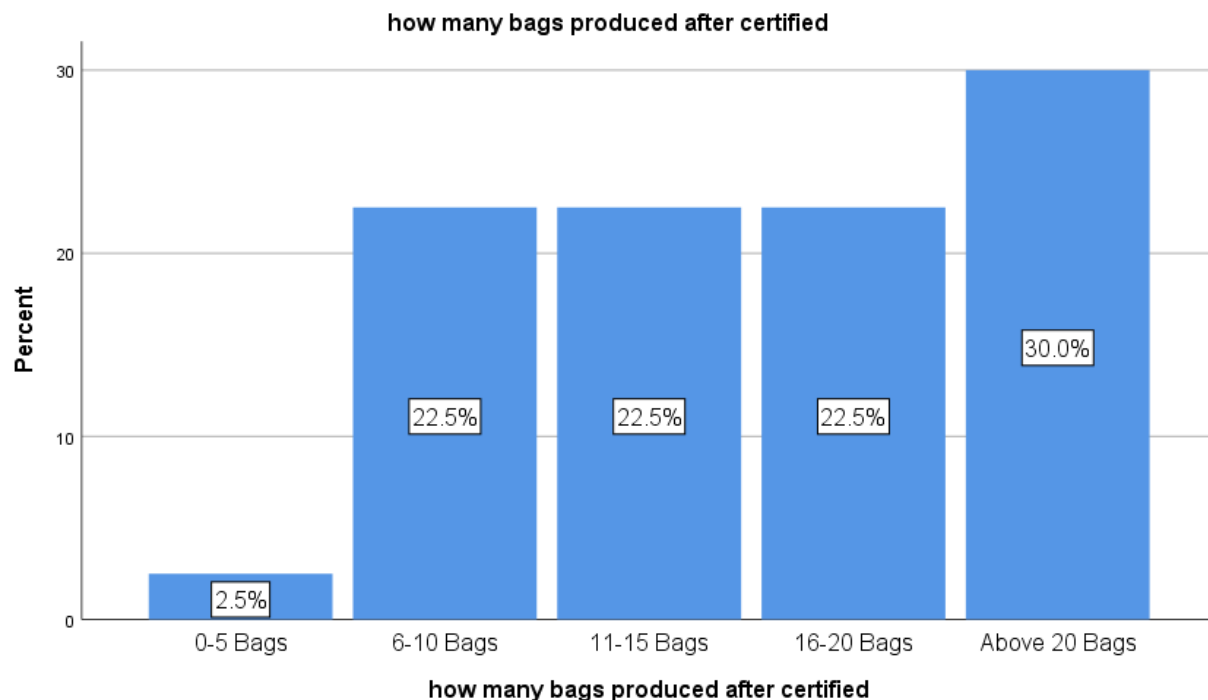
Figure 9: Number of bags produced before Certification



Source: Field Survey Data (2021)

Joining the RA certification led to an increase in the number of bags the smallholder farmer's produced. After being certified, 30% of the farmers produced above 20 bags, 22.5% produced 16 to 20 bags, 22.5% of the farmers produced 11 to 15 bags, 22.5% produced 6 to 10 bags and 2.5% produced 0 to 5 bags according to the data obtained from certified smallholder farmers. See figure 10 below

Figure 10: Number of bags produced after Certification



Source: Field Survey Data (2021)

Figures 9 and 10 showed that joining certification increased the farmer's production volume. As reported by ICCO (2012) UTZ and Rainforest Alliance are explicit about their objective of increasing farmers' yields. They state certification has improved the social, economic, and environmental conditions of farmers and the communities they live in. This information supports the benefits stated by the certified farmers in this research.

It is required by the RA certified standard that group members i.e. certified farmers are to be trained once per year. The certified farmers stated in the questionnaire and the FGDs that they indeed received training. The training organized by the LBCs and Cocobod extension agents to support farmers to improve their cocoa production activities and increase their yields were about the following topics:

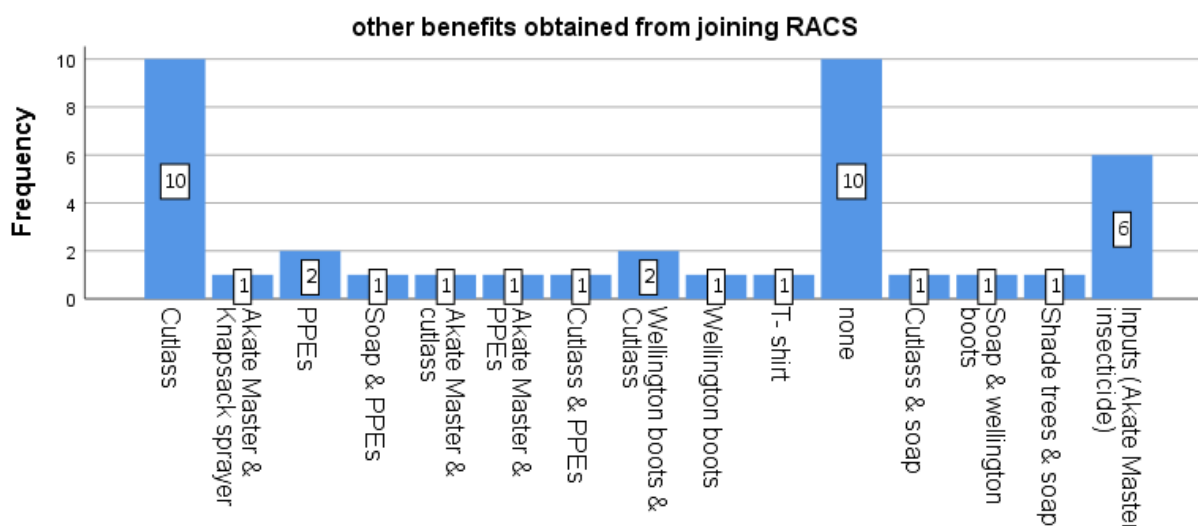
1. good agricultural practices
2. Integrated pest management
3. Health and safety practices related to cocoa farming
4. Workers' rights and child labor issues
5. Bio-diversity and environmental conservation
6. Pest and disease control measures.

4.6 Difference between Certified and Non-Certified Smallholder Cocoa Farmers

Feedback obtained from the respondents showed that certified farmers received regular training from the LBCs' internal management. They also received extension services from Cocobod extension agents about the management of cocoa production. The certified farmers received cash premiums at the end of every cocoa season and in-kind premiums such as cutlasses, wellington boots, shade tree seedlings, etc. as compared to non-certified farmers who only obtained free seedlings from the government. Out of the

40 certified farmers, 10 could not receive in-kind benefits. This is because the farmers were not available when the distribution was done for the 2020 crop season. Figure 11 below shows the in-kind premium certified farmers received.

Figure 11: In-kind premium of items received by farmers



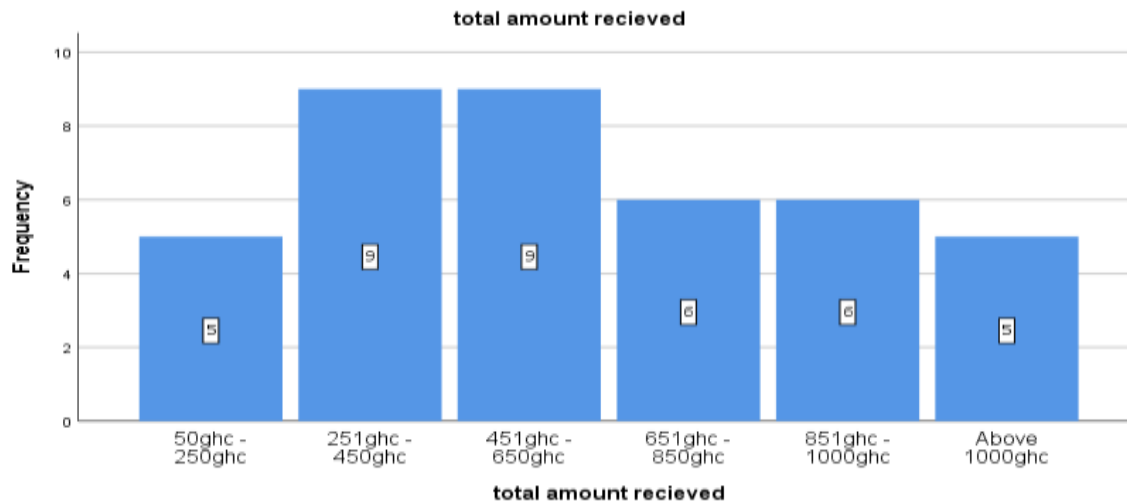
Source: Field Survey Data (2021)

Certified farmers said during FGDs that they receive cash premium from their respective LBCs however, they are not privileged to the total amount of money received and requested if a farmer representation can be added to the premium disbursement and decisions made on premium allocation by the LBCs.

From the results, the in-cash premium received by certified farmers varied as the premium is paid according to the number of cocoa bags a certified farmer supplied to the LBC. The graph below shows the average range a farmer received according to data from the questionnaire.

Figure 12 below illustrates the in- cash premium distribution to the 40 respondents for the 2020 cocoa season from their respective LBCs.

Figure 12: In-cash premium of items received by farmers



Source: Field Survey Data (2021)

Another difference was that the internal management system of the LBCs conducted regular internal farm inspections and assisted the certified farmers to correct all non – conformities in their farms that made their farms meet the requirements of RA Certified. It was also established from this research that, because certified farmers belonged to certification groups, they were able to access credits from a selected financial institution to be able to expand their farms' production with a flexible payback plan since the financial institution can trace the certification groups through their respective LBCs according to information from FGDs.

In the FGDs con- certified farmers stated that they only received training from Cocobod extension agents. The income they received was through the selling of their cocoa beans to their respective LBCs.

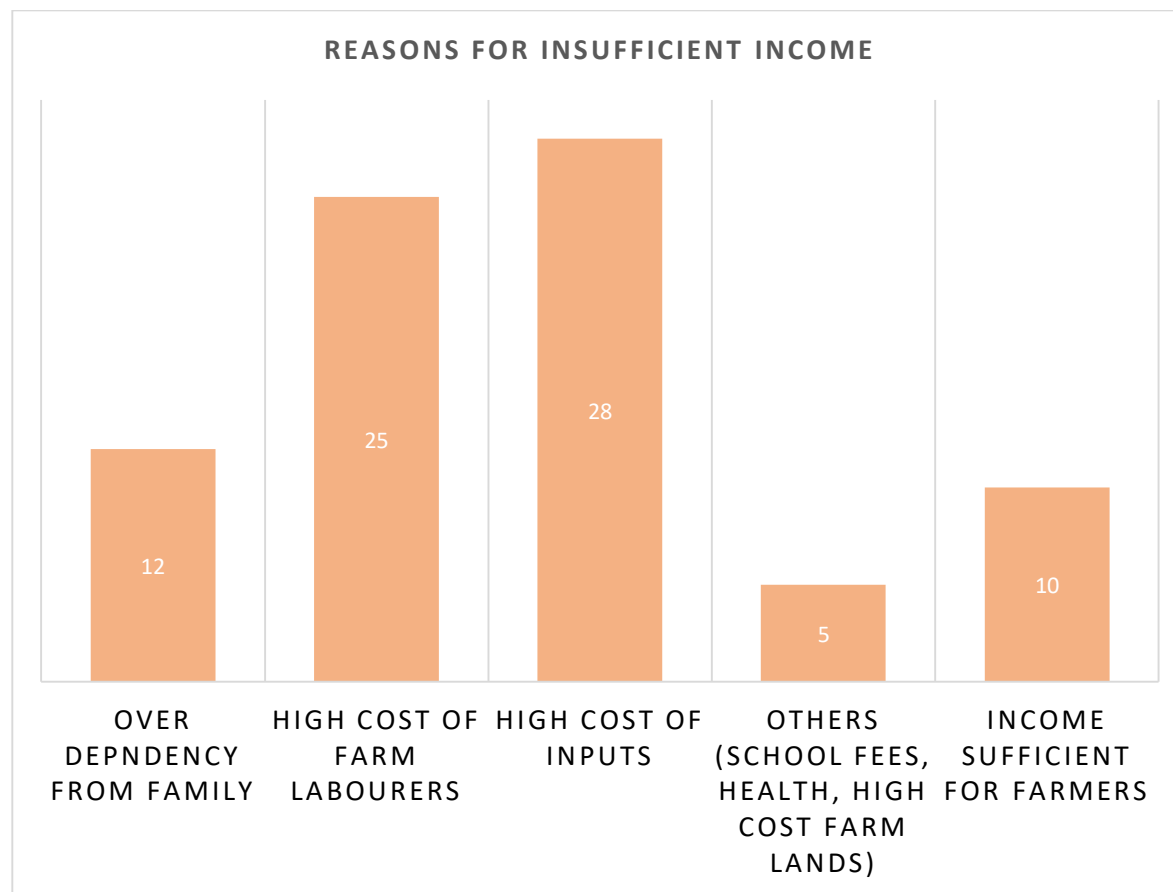
According to a key informant from Cocobod, the standard helps farmers to desist from bad fermentation practices and this has gone a long way to improving the quality of cocoa beans produced by certified farmers. The key informant said there are no clear-cut differences between conventional farmers and that of certified farmers. They had a strong conviction that it depends mainly on the practices of an individual farmer because there were instances whereby upon all the training LBCs gave to certified farmers, they usually do not practice them. On the other hand, a few of the non-certified farmers took the little training the extension agents gave them seriously and practiced them. According to Sellare et al., (2020) certified farmers are typically organized in cooperatives. This confirms the findings of this research that there is a difference between certified and non-certified smallholder farmers.

4.7 Reasons Certified Smallholder Farmers Complain about Insufficient Income

Since certified smallholder farmers had been complaining about insufficient income it was necessary to find out what might be causing it. This question was asked to the farmers during the certified farmers' FGDs and in administering the questionnaire. According to respondents from the questionnaire, certified smallholder farmers complained about insufficient income due to 1. Over dependency on other family members to pay their bills 2. Very high cost of farm labors or workers to assist in the cocoa production 3.

High cost of inputs to support the production 4. High cost of school fees, health cost, 5. High cost of renting land for cocoa production. From FGDs, it was established that LBCs could not pay the in-cash premiums to certified farmers at the end of the cocoa season on time as promised. Secondly, the cash premium received from the LBCs did not correspond to the number of bags of cocoa beans supplied by farmers. These made certified farmers complain about the insufficient income they experienced in their cocoa production. Figure 13 Illustration of Insufficient Income by Certified Smallholder farmers

Figure 13: Insufficient Income SH Farmers



Source: Field Survey Data (2021)

CHAPTER 5 DISCUSSION

This chapter discusses in detail the findings of the data from the questionnaire, Focused Group Discussions, and Interviews

5.1 Gender and Age of Respondents

Results of the survey showed that the majority of certified cocoa farmers are males (see figure 3) from the findings, this is a true reflection of the Ghanaian idea that farming is for the strong and energetic as a lot of men are engaged in cocoa farming. According to Danso-Abbeam et al., (2020), women face some barriers in the cocoa sector. Notable among these barriers is the growing perception that cocoa farming is not “a woman thing”, limiting their aspirations and opportunities for them in the industry, particularly access to land. Moreover, women are expected to take care of their young siblings and perform all kinds of household chores from tender age to their old age, crowding out the opportunity to acquire cocoa farming skills or engage in any farm-related activities to earn income for themselves. This supports the findings of this research on why women are the minority in terms of cocoa production in Ghana.

5.2 Respondents Level of Education

The findings of the survey showed that the majority of the farmers had never had any former education (see figure 5). According to the key informants from the LBCs, the introduction of Rainforest Alliance certification had improved farmer's knowledge about the improved way of cocoa production and how to sustain the production therefore the information from the FGDs by the non-certified farmers stating that majority of farmers are not educated therefore complying with the requirements of the RA certified standard will be difficult cannot be substantiated. According to the researcher (Ofoe2021), the findings of this research have brought out the assumption that if farmers are not educated that does not mean knowledge cannot be acquired.

5.3 Reasons for Joining Rainforest Alliance Certification

The Rainforest Alliance Certification program has been very useful to farmers who have had the opportunity to participate in the certification program for more than five years. The results from the questionnaire showed that the majority of the sampled certified farmers stated that they join the Rainforest Alliance certification to be able to acquire additional income since farmers after selling their certified cocoa beans will receive additional income that could support them to increase their cocoa production. This additional money obtain will be able to support the farmer in the payment of his or her bills or pay the cost of hiring laborers to work in their farms as stated by certified farmers from the questionnaire. From the FGDs, certified farmers also mentioned that joining the RA Certified has increased their production and reduce pest and disease infestation since they observe good management practices in their cocoa farms. According to one of the LBCs key informants from the interviews, said the certification standard has helped the farmers in the area of good agricultural practices for instance farming without cutting down trees indiscriminately, since failing to adhere to these requirements they risk losing premium.

Certified smallholder farmers from the questionnaire and the FGDs said that they joined the certification standard because they were going to obtain knowledge about cocoa certification and practice the knowledge acquired in their cocoa production which could support farmers to increase production without destroying the environment with their farming activities. A key informant from Cocobod confirmed what the farmers said by also saying that concerning environmental protection farmers now

understand the importance of protected areas like forests, rivers and streams, wildlife and game, etc., and their contribution to the protection of the eco system and its importance to their farms in future.

Smallholder farmers joined the certification standard because farmers would have access to farm inputs such as pesticides, fertilizers, cocoa seedlings, shade tree seedlings either for free or at a subsidized rate with a relaxed mode of a re-payment plan from their LBCs according to farmers from the questionnaire and FGDs. The Cocobod extension agents who are also key informants said that they believe farmers decided to join the RA certified because of cash premium, personal protective equipment (PPEs), and farm inputs that will be given to farmers by their LBCs. According to Ochieng et al.,(2013), certification means that there is less water pollution, less soil erosion, reduced threats to the environment and human health, wildlife habitat is protected, less water use, more efficient farm management, improved conditions for farm workers, improved profitability and competitiveness for farmers and more collaboration between farmers and conservationists. This information further confirms what the Cocobod extension agents said earlier.

5.4 Change in Production Practices

The introduction of Rainforest Alliance certification to smallholder cocoa farmers transformed and changed their perception of cocoa production practices. Based on the findings from the questionnaire, focused group discussion, and interviews, farmers before joining the standard cultivated their cocoa farms under conditions that were not following the RA Certified requirements which affected farmer's production in terms of volumes. Before certification, good agricultural practices were not observed by farmers they were only interested in harvesting their cocoa when mature. The findings from the FGDs by certified farmers used unapproved pesticides indiscriminately and were not concerned about the withdrawal periods of pesticides, farmers contaminated water bodies due to their farming activities and further destroyed the environment by cutting down trees to expand their cocoa farms. From the questionnaire, farmers left their matured and ripped cocoa pods to overripe before harvesting which affected the weight of the cocoa beans and contributed to low income when dried cocoa beans are sold to the LBCs.

Njimanted et al., (2020) state that, changing farmers' behavior, and perception toward sustainable management practices will lead to a two-fold change in the cocoa sector; firstly, efficiency and effectiveness in implementing GPHMP will improve; secondly, it is vital to pursue increase production of safe and quality cocoa beans. This information supports the finding of the research confirming the change in production practice before and after joining the certification standard.

From the questionnaire, FGDs and interviews by key informants confirmed from the field data collection that farmers after joining the Rainforest Alliance certification improved in their cultivation practices as farmers harvested the ripped cocoa pods on time to prevent weight loss and attracting pests and diseases, regular pruning and wedding were done appropriately to obtain optimal cocoa tree health, good fermentation practices were observed and farmers obtained adequate certification knowledge about Rainforest Alliance from their respective LBCs. (see figure 8)

5.5 Benefits of Joining Rainforest Alliance Certification

According to the certified farmers and key informants, the benefits certified farmers receive after joining the standard are enormous. Respondents confirmed that their production volumes increased which positively affected their income. Both in-cash and in-kind premiums were received from their LBCs since their cocoa beans produced were of higher premium quality. (See figure 8, 10, 11)

According to Quarmin et al., (2012) cocoa beans exported from Ghana attract a substantial-quality premium compared with cocoa from other countries. These quality premiums partly explain the high revenue Ghana earns from cocoa, amounting to about 30% of Ghana's total export revenue and about 4% of GDP. This statement confirms the findings from this research that certified farmers producing quality premium cocoa beans obtained premium which serves as a benefit of being certified to produce quality cocoa beans. The general phenomenon is that Ghana cocoa is substantial-quality premium cocoa, non-certified farmers do not receive any extra money or premium after selling their beans to the LBCs and do not receive any extra social benefits like health centers, boreholes, and libraries from their LBCs in their communities.

As a requirement of the Rainforest Alliance standard that smallholder farms receive training once a year, respondents confirmed that their licensed buying companies provided them with training about good agricultural practices, good environmental practices, good management practices, and good social practices. All these trainings can be considered as benefits obtained from joining the rainforest alliance certification. Respondents confirmed that their villages now had access to potable water, health centers, and schools for their children as other social benefits they have received for becoming certified for more than five years and by the support from their licensed buying companies. LBCs organize Farmer Field Schools (FFS) for their certified farmers to obtain adequate knowledge about shade management, IPM measures, pruning of cocoa trees, and taking their cocoa farm production as a business. According to Tsiboe et al., (2016), the FFS focuses on increased adoption of good production practices that enable farmers to better manage their cocoa farms.

5.6 The difference Between Certified and Non certified Smallholder Cocoa Farmers

Feedback from the field data collection indicated that certified smallholder farmers received training and support services from their respective licensed buying companies and extension agents from Cocobod, unlike non-certified smallholder farmers who only received extension support services from the government extension agents according to key informant Cocobod.

Feedback from the respondents in the questionnaire stated that certified farmers are provided pesticides from their LBCs to be able to complete the spraying of their farms. It was established from the FGDs that some non-certified farmers used obsolete pesticides or banned chemicals in their cocoa farms. Non-certified farmers left empty pesticides containers in their farms because they were under no obligation to remove them from their farms. According to Djokoto et al., (2016) it is not surprising because, aside from cocoa health and extension division (CHED) providing extension services to both organic and conventional cocoa farmers, organic farmers have additional extension support from the LBCs. Certified farmers enjoyed regular internal farm inspections from the LBCs extension agents and assisted farmers to comply with the requirements according to the rainforest Alliance certification standard.

Owusu-Amankwah (2015) found that 60 non-certified farmers claimed that they have heard of certification as a system whereby a premium was paid to farmers when they followed certain standards in the production of cocoa. They admitted the difference in yield between their farms and that of the certified farmers. They remarked that the certified farms looked more flourishing than the uncertified ones. Therefore Owusu-Amankwah's research findings are in line with this research

It was found Cocobod extension agents that there are no clear-cut differences between conventional farmers (non-certified) and that of certified farmers. They had a strong conviction that it depends mainly

on the conscience of an individual farmer because there were instances whereby upon all the training LBCs gave to certified farmers, they usually do not practice them. On the other hand, a few of the non-certified farmers took the little training the extension agents gave them seriously and practiced them. This information can be true but the justification is that during the internal inspections carried out by the LBCs in the certified farmer's farms if it is found out that a farmer refuses to practice what the standard requires from them, that farmer will be removed or de-certified from the group and all the benefits the farmer enjoyed will cease. Therefore because of the requirements of the RA Certified standard and to risk being removed from the certification group. Certified farmers have no option but to practice the standard's requirements. Non-certified farmers are under no obligation to practice any certification requirements to maintain their farms but as stated by the extension agent depend mainly on the conscience of that individual farmer.

According to Hardt et al., (2015), coffee farms that seek SAN Rainforest Alliance certification already had a profile of conservation of the native vegetation at the beginning of the certification process that was maintained throughout time and that is statically different from non-certified farms after nine years. Certified coffee farms continue to have more native vegetation cover than noncertified farms. This information establishes the fact that there is a clear difference between certified and non-certified smallholder farmers.

5.7 Reasons Certified Smallholder Farmers Complain about Insufficient Income

Out of the 40 certified farmers, the findings showed that 28 farmers complained because of the high cost of inputs, 25 farmers complained because of the high cost of labourers, 12 farmers as over – dependency from families, and 5 farmers complained because of the high cost of school fees, health, farmlands. 10 of the sampled farmers stated their income is sufficient and it could support them in their entire cocoa production and the upkeep of their families. (See figure 13)

Certified farmers thought because they were promised of receiving a premium at the end of the cocoa season by their respective LBCs, farmers were of the view that all their cocoa produced within the cocoa season qualified for premium. Little did they know that the premium is only paid on the cocoa purchased during the major season.

According to the researcher (Ofuo2021), within the cocoa season in Ghana, there are two seasons namely the major season starting October to March and the minor season May to August. Certified farmer's expectation of the premium was very high as they considered receiving a premium for both the major and the minor seasons but felt disappointed only to receive a premium for the major season.

5.8 Constraints and Prospects of Rainforest Alliance Certification

Limitations and prospects about Rainforest Alliance Certification from this research were analyzed using the SWOT matrix tool.

Figure 14 below provides the swot analysis of RA Certified during the field data collection and according to certified farmer's feedback from the questionnaires, FGDs, and key informant's interviews.

Figure 14: SWOT analysis of RA Certified

SWOT ANALYSIS OF RA CERTIFIED	
STRENGTH	<ol style="list-style-type: none"> 1. Supports smallholder farmers to improve upon their farming practices. 2. Supports farmers to obtain additional income called premium. 3. Protects the environment by making farmers plant shade trees, prohibits production in primary forest, prohibits hunting of animals and endangered species. 4. Protects workers rights and promote producers livelihood.
WEAKNESS	<ol style="list-style-type: none"> 1. There are no clear cut percentage of premium allocated to certified smallholder farmers 2. No provision of producers in the requirements of being part of premium committee as required by the standard. 3. Some of the control points in the standard are very broad or general which needs to be country specific
OPPORTUNITIES	<ol style="list-style-type: none"> 1. Certified farmers benefits some social amenities from the LBC's and the first buyer cocoa beans. 2. Certified farmers becomes aware of their health conditions and uses PPE's when applying pesticides. 3. It gives exposure to farmers who had little or no knowledge about Rainforest Alliance certification
THREATS	<ol style="list-style-type: none"> 1. Cocobod might come up with directives of taking up the standard and run it since farmers complains that the requirements are very strict. 2. Competition between RA certified and Fairtrade since Fairtrade certified farmers have the total control on their premium.

Source: Author (2021)

CHAPTER 6 CONCLUSIONS

This chapter highlighted the conclusion and recommendation about the research on how the effect of Rainforest Alliance certification made to certified smallholder cocoa farmers.

The findings of the research concluded that certified smallholder cocoa farmers decided to join Rainforest Alliance certification to produce quality cocoa beans to obtain income or premium, obtain certification knowledge that sustainably supports their cocoa production, and gain access to farm inputs from their licensed buying companies.

Furthermore, the findings showed that certified farmers after joining Rainforest Alliance certification changed their cocoa production practices from the former practices where good agricultural practices were not observed which made farmers harvested fewer cocoa pods due to the over-ripening of matured cocoa pods that yielded to a weight loss of cocoa beans. Farmers resorted to the improved method of cocoa production by observing good agricultural practices and making sure whatever knowledge farmers acquired are strictly adhered to.

In addition, the majority of the certified farmers said that the benefits they received after joining the Rainforest Alliance certification standard;

1. Their number of cocoa bags increased which then increased the amount of income or premium they got from their respective LBCs.
2. They received a lot of training from their licensed buying companies extension agents and Cocobod extension agents about their farming practices and how to improve upon their livelihood as certified cocoa farmers.
3. Receiving social benefits such as potable water, health centers, and schools for their children, libraries, computer labs, corn and oil Mills which come as a support to their communities from their LBCs as a result of their cocoa production from the community.

Besides, the research findings showed some challenges certified farmers went through as the high cost of farm laborers, high cost of farm inputs, high cost of land for cocoa production, and over-dependency from family members for income. Farmers attributed it to certification because proper care is needed to be able to meet the certification requirements of RA-certified cocoa. 10 certified farmers said their income was sufficient and it could support the farm production and upkeep for the family.

RA certified had a positive effect on certified farmers by increasing their production volumes, increased their income level, and providing certification knowledge to farmers for sustainable production and improving their livelihood hence certified farmers needed to adhere to the requirements of the standard.

From the findings of the research certified farmers are satisfied with the Rainforest Alliance certification standard because farmers have witnessed a change in cocoa production and farmer's livelihood in general. The destruction of the environment has been reduced and certified farmers now understand the importance of conserving the environment to sustain their cocoa production and continue to receive both in-cash and in-kind benefits.

Certified farmers are expecting an update of the certification standard whereby the standard makes provision for group members about the percentage of the premium component they can receive from the LBCs and how group members can be part of premium committees set up by LBCs.

The researcher use Questionnaire, FGDs and Key informants interviews to collect information from certified farmers, Non Certified farmers, LBCs and some Cocobod staff for this research and the methods used yielded positive results without missing out on information. Recommendations have also been suggested to the commissioner of this research and certified farmers for further improvements.

CHAPTER 7 APPLIED RECOMMENDATIONS

7.1 Recommendation for RA Certified

It is recommended that for effective implementation of the Rainforest Alliance certification standard, RA Certified should make a provision in the requirement for 3 executives certified farmers groups needed to be part of the premium committee set up by LBCs in the handling of premium issues since the Guidance Template Self-assessment of the RA certified is silent on group members do not know the total amount group management transferred to Rainforest Alliance Sustainability Differential in cash or other monetary payment to group members.

RA Certified is recommended to state the total percentage of premium to be given to certified farmers in the Guidance Template Self – assessment which will compel certificate holders to pay a standard amount to the certified farmer group for transparency. This revision of this standard can be done before the 2022/2023 certification year begins as this will help the farmers to know the total premium a group will receive from their LBCs and clear all doubts or mistrust among certified farmers and their LBCs.

7.2 Recommendation for LBCs and RA Certified Farmers

The LBCs should take the lead in facilitating the creation of a small subgroup responsible for the provision of labor hence reducing the total labor cost for group members. Since group members will support colleague members to conduct farm work without hiring farm labor at a high cost.

Certified farmers can organize themselves into groups of 3 to 4 members so that there will be an equal share of work among members on their farms. Certified smallholder farmers should increase the use of cultural practices and intensify IPM measures for effective reduction of high input costs. Certified smallholder farmers should implement good agricultural practices that could further reduce the use of more inputs that are of high cost for cocoa production. The cost of inputs is very high therefore certified farmers need to use them when they are very relevant.

References

1. Abdulai, I., Jassogne, L., Graefe, S., Asare, R., Van Asten, P., Läderach, P. and Vaast, P., 2018. Characterization of cocoa production, income diversification and shade tree management along a climate gradient in Ghana. *PLOS ONE*, 13(4), p.e0195777.
2. Ansah, E., Kaplowitz, M., Lupi, F. and Kerr, J., 2019. Smallholder participation and procedural compliance with sustainable cocoa certification programs. *Agroecology and Sustainable Food Systems*, 44(1), pp.54-87.
3. AsankoInsight. (2021) *Ghana Cocoa Value Chain* [online] Available from: <https://www.asokoinsight.com/content/market-insights/ghana-cocoa-value-chain> [accessed 2nd September 2021]
4. Blackman, A. and Rivera, J., (2011). *Producer-Level Benefits of Sustainability Certification*. *Conservation Biology*, 25(6), pp.1176-1185.
5. Chaplin-Kramer, R., Jonell, M., Guerry, A., Lambin, E., Morgan, A., Pennington, D., Smith, N., Franch, J., and Polasky, S., (2015). *Ecosystem service information to benefit sustainability standards for commodity supply chains*. *Annals of the New York Academy of Sciences*, 1355(1), pp.77-97.
6. Cocoa Research Institute of Ghana.(2017) Report On Land Tenure & Cocoa Production In Ghana. Accra:[s.n] [online] Available from: https://www.worldcocoafoundation.org/wp-content/uploads/files_mf/1492612620CRIGLandTenureSurveyFinal41217.pdf [Accessed 5th September 2021]
7. Danso-Abbeam, G., Baiyegunhi, L. and Ojo, T., 2020. Gender differentials in technical efficiency of Ghanaian cocoa farms. *Heliyon*, 6(5), p.e04012.
8. DeFries, R., Fanzo, J., Mondal, P., Remans, R., and Wood, S., (2017). *Is voluntary certification of tropical agricultural commodities achieving sustainability goals for small-scale producers? A review of the evidence*. *Environmental Research Letters*, 12(3), p.033001.
9. Djokoto, J., Owusu, V. and Awunyo-Vitor, D., 2016. Adoption of organic agriculture: Evidence from cocoa farming in Ghana. *Cogent Food & Agriculture*, 2(1).
10. Dompereh, E., Asare, R. and Gasparatos, A., 2021. Sustainable but hungry? Food security outcomes of certification for cocoa and oil palm smallholders in Ghana. *Environmental Research Letters*, 16(5), p.055001.
11. Fenger, A. N., Skovmand Bosselmann, A., Asare, R. and de Neergaard, A., (2016). *The impact of certification on the natural and financial capitals of Ghanaian cocoa farmers*. *Agroecology and Sustainable Food Systems*, 41(2), pp.143-166.
12. Ghana Cocoa Board (cocobod). (2016). Manual for Cocoa Extension in Ghana. [s.l]. [s.n]. [Online] Available From: <https://ccafs.cgiar.org/publications/manual-cocoa-extension-ghana#.XkD8cyOnzIU> [Accessed on: 5th September 2021]
13. Ghana. Ghana Statistics Service. *District Report Central upper*. (2021). Denkyira east. [online] Available at: https://www2.statsghana.gov.gh/docfiles/2010District_Report/Central/upper%20denkyira%20east.pdf [Accessed 3 June 2021].
14. Gockowski, J., Afari-Sefa, V., Sarpong, D., Osei-Asare, Y. and Agyeman, N., (2013). *Improving the productivity and income of Ghanaian cocoa farmers while maintaining environmental services: what role for certification*. *International Journal of Agricultural Sustainability*, 11(4), pp.331-346.
15. Government of Ghana (2020). *CEO oral communication about cocoa prices for the cocoa crop season*.

16. Hardt, E., Borgomeo, E., dos Santos, R., Pinto, L., Metzger, J. and Sparovek, G., 2015. Does certification improve biodiversity conservation in Brazilian coffee farms?. *Forest Ecology and Management*, 357, pp.181-194.
17. Iddrisu, M., Aidoo, R. and Abawiera Wongnaa, C., (2020). *Participation in UTZ-RA voluntary cocoa certification scheme and its impact on smallholder welfare: Evidence from Ghana*. *World Development Perspectives*, 20, p.100244.
18. International Cocoa Initiative (ICI). (2017) *Cocoa farmers in Ghana experience poverty and economic vulnerability* [online] Available from: <https://cocoainitiative.org/news-media-post/cocoa-farmers-in-ghana-experience-poverty-and-economic-vulnerability/> [accessed 2nd September 2021]
19. International Cocoa Organization (ICCO). (2012) *Study on the costs, advantages and disadvantages of cocoa certification* [online] Available from: https://www.icco.org/wp-content/uploads/2019/07/121105_Study-on-the-costs-advantages-and-disadvantages-of-cocoa-certification_FINAL_Erratum-1.pdf [accessed 3rd September 2021]
20. Kongor, J., De Steur, H., Van de Walle, D., Gellynck, X., Afoakwa, E., Boeckx, P. and Dewettinck, K., 2017. Constraints for future cocoa production in Ghana. *Agroforestry Systems*, 92(5), pp.1373-1385.
21. Krauss, J. and Barrientos, S., 2021. Fairtrade and beyond: Shifting dynamics in cocoa sustainability production networks. *Geoforum*, 120, pp.186-197.
22. Laws, S., Harper, C., Jones, N. and Marcus, R. (2013). *Research for development*. 2nd ed. London: SAGE.
23. Maguire-Rajpaul, V., Khatun, K. and Hirons, M., 2020. Agricultural Information's Impact on the Adaptive Capacity of Ghana's Smallholder Cocoa Farmers. *Frontiers in Sustainable Food Systems*, 4.
24. Mey, F., de, Y., Nyssen, J. and Maertens, M., (2017). *Do Private Sustainability Standards Contribute to Income Growth and Poverty Alleviation? A Comparison of Different Coffee Certification Schemes in Ethiopia*. *Sustainability*, 9(2), p.246.
25. Suh, N., F. Njimanted, G. and Thalut, N., 2020. *Effect of farmers' management practices on safety and quality standards of cocoa production: A structural equation modeling approach*. *Cogent Food & Agriculture*, 6(1), p.1844848.
26. Ochieng, B., Hughey, K. and Bigsby, H., 2013. Rainforest Alliance Certification of Kenyan tea farms: a contribution to sustainability or tokenism?. *Journal of Cleaner Production*, 39, pp.285-293.
27. Ofoe, I.K., (2021). *Premium prices paid to certified farmers, personal information from field experience and farm visit*.
28. Okoffo, E., Fosu-Mensah, B. and Gordon, C., 2016. *Persistent organochlorine pesticide residues in cocoa beans from Ghana, a concern for public health*. *International Journal of Food Contamination*, 3(1).
29. Onumah, J., Onumah, E., Al-Hassan, R. and Brümmer, B., 2013. Meta-frontier analysis of organic and conventional cocoa production in Ghana. *Agricultural Economics (Zemědělská ekonomika)*, 59(No. 6), pp.271-280.
30. Owusu-Amankwah R.(2015) *Certifications Child Labour and Livelihood Strategies: An Analysis of Cocoa Production in Ghana*. Wageningen university [online] Available from: <https://edepot.wur.nl/353506> [accessed 3rd September 2021]
31. Potts J., Lynch M., Wilkings A., Huppé G, Cunningham M and Voora V (2014) *The state of sustainability initiatives review (2014): Standards and the green economy*. International Institute

- for Sustainable Development (IISD) and the International Institute for Environment and Development (IIED)* 332
32. Quarmin, W., Haagsma, R., Sakyi-Dawson, O., Asante, F., van Huis, A. and Obeng-Ofori, D., 2012. Incentives for cocoa bean production in Ghana: Does quality matter?. *NJAS - Wageningen Journal of Life Sciences*, 60-63, pp.7-14.
 33. Rainforest Alliance. (2021) *what-does-rainforest-alliance-certified-mean*. [Online] Available from <https://www.rainforest-alliance.org/faqs/what-does-rainforest-alliance-certified-mean>. [Accessed 4 May 2021]
 34. Ros-Tonen, D, H., M. and Derkyi, M., (2017). *Advanced Value Chain Collaboration in Ghana's Cocoa Sector: An Entry Point for Integrated Landscape Approaches?*. *Environmental Management*, 62(1), pp.143-156.
 35. Sellare, J., Meemken, E., Kouamé, C. and Qaim, M., 2020. Do Sustainability Standards Benefit Smallholder Farmers Also When Accounting For Cooperative Effects? Evidence from Côte d'Ivoire. *American Journal of Agricultural Economics*, 102(2), pp.681-695.
 36. Sonwa D.J., Weise S.F., Nkongmeneck B.A., Tchatat M., Janssens M.J.J., (2017) *Structure and composition of cocoa agroforests in the humid forest zone of Southern Cameroon*. *Agrofor Syst* 91:451–470
 37. Tschardt, T., Milder, J., Schroth, G., Clough, Y., DeClerck, F., Waldron, A., Rice, R., and Ghazoul, J., (2014). *Conserving Biodiversity Through Certification of Tropical Agroforestry Crops at Local and Landscape Scales*. *Conservation Letters*, 8(1), pp.14-23.
 38. Tsiboe, F., Dixon, B., Nalley, L., Popp, J. and Luckstead, J., 2016. Estimating the impact of farmer field schools in sub-Saharan Africa: the case of cocoa. *Agricultural Economics*, 47(3), pp.329-339.
 39. Van Rijsbergen, B., Elbers, W., Ruben, R. and Njuguna, S., 2016. The Ambivalent Impact of Coffee Certification on Farmers' Welfare: A Matched Panel Approach for Cooperatives in Central Kenya. *World Development*, 77, pp.277-292.
 40. Wijaya, A., Glasbergen, P., Leroy, P. and Darmastuti, A., 2016. Governance challenges of cocoa partnership projects in Indonesia: seeking synergy in multi-stakeholder arrangements for sustainable agriculture. *Environment, Development and Sustainability*, 20(1), pp.129-153.

Annex 1: Questionnaire for Certified Farmers



The questionnaire was administered to Certified Smallholder farmers from the certified groups who were not executives of the certified group.

Dear Respondent,

My name is Isaac Kwasi Ofoe, a master's student at Van Hall Larenstein University of Applied Sciences in the Netherlands. I am conducting research titled “Effect of Rainforest Alliance Certification Standard on Certified Smallholder Cocoa Farmers in the Upper Denkyira East Municipal Assembly of Ghana”. The purpose of the research is to assess the effects of Rainforest Alliance Certification on certified smallholder cocoa farmers within the cocoa value chain. The results of the research are to formulate recommendations that will improve the certification standard as well as improving the livelihood of the certified smallholder farmers. You have been selected as a certified farmer for this questionnaire to obtain data from you for this research. Kindly respond to the questions listed below and your responses will be treated as confidential. This questionnaire will take approximately 20 to 30 minutes of your time to complete. Thank you for your cooperation.

1. Name: (Optional)

2. Sex: Male ☐ Female ☐

3. Town of Farmer:

4. Age:

(18-29) ☐ (30-45) ☐ (46-59) ☐ (60-75) ☐ (>76) ☐

5. Level of Education

Basic School ☐ Junior High ☐ Senior High ☐ Tertiary ☐
Not at all ☐

6. What is the size of your cocoa farm?.....

7. How many years have you been involved in Rainforest Alliance Certification?

8. Why did you decide to join the Rainforest Alliance Certification Standard? (Multiple answers apply)
- (a) For Income (premium)
 - (b) To obtain Knowledge about cocoa certification
 - (c) To obtain Inputs (pesticides, fertilizers, PPE's, cutlass, pruners, shade tree seedlings, cocoa seedlings)
 - (d) None of the above
9. How did you cultivate your cocoa farm before joining Rainforest Alliance Certification? (Multiple answers apply)
- (a) Not planting in lines (haphazard planting)
 - (b) No shade trees planted
 - (c) Irregular Weeding of cocoa farm
 - (d) Irregular pruning practices
 - (e) Late harvesting of ripped pods
 - (f) Picked pods from the same tree to plant (Atodwe)
 - (g) Others (specify).....
10. How do you cultivate your cocoa farm after joining Rainforest Alliance Certification?
(Multiple answers apply)
- (a) Planting in lines
 - (b) Planting of desirable shade trees
 - (c) Regular weeding
 - (d) Regular pruning
 - (e) Early harvesting
 - (f) Planting of disease-free seedlings
 - (g) Others (specify).....
11. How many bags of cocoa did you produce in the whole cocoa season before certification?
- (a) 0 – 4
 - (b) 5 – 8
 - (c) 9 - 14

- (d) 15 - 20
- (e) Above 21

12. How many bags more of cocoa do you produce in a whole cocoa season after being certified?

.....

13. What kind of training have you received as a certified smallholder cocoa farmer?

(Multiple answers apply)

- (a) GAPs Training (Good Agricultural Practices)
- (b) IPM Training (Integrated Pest Management)
- (c) Health and Safety Training in cocoa production
- (d) Workers Right and Child Labour Training
- (e) Biodiversity and Environmental Conservation Training
- (f) Pest and disease control practices
- (g) Others (specify

14. How many times in a year within the cocoa season do you apply approved pesticides? (Please tick)

0	1	2	3	4	5	6

15. Have you ever received a cash premium from your Licensed Buying Company?

- (a) Yes
- (b) No

15 b. If Yes, How many times have you received a premium?

16. What is the total amount of money did you receive?

17. What (in-kind) benefits have you obtained after joining Rainforest Alliance certification?

(Please specify).....

18. Is your income sufficient after being a certified Rainforest Alliance smallholder farmer?

- (a) Yes

(b) No

19. If No, why do you complain about insufficient income after being certified?

(Multiple answers apply)

(a) Over dependency from family members

(b) High cost of farm laborers

(c) High cost of inputs (fertilizers, pesticides, PPE's, spraying machines, farm tools)

(d) (Please specify)

Annex 2: Interview Checklist

2.1 Focused Group Discussion – Certified Smallholder Farmers

1. Brief background about the group.
2. What is the level of knowledge about Rainforest Alliance Certification
3. Why did they decide to join Rainforest Alliance certification and not another certification standard
4. How many years have they been implementing the rainforest Alliance standard
5. What are the challenges of implementing the standard?
6. What benefits have they achieved from the standard?
7. Do you receive in-cash premiums regularly from your licensed buying company
8. If you compare certified and conventional smallholder farmers who are better off in terms of cocoa production knowledge, income, and other resources and why?
9. How has joining the Rainforest Alliance Certification changed the way of cocoa farming?

2.2 Focused Group Discussion – Conventional Smallholder Farmers

1. Brief background about the group
2. How many years have you been in the group
3. What are the benefits of a conventional smallholder cocoa farmer
4. What are the challenges of a conventional smallholder cocoa farmer
5. Do you receive any other in-cash or in-kind resources
6. If you compare certified and conventional smallholder farmers who are better off in terms of cocoa production knowledge, income, and other resources and why?
7. Why haven't you join the Rainforest Alliance Certification and what are the reasons?

2.3 Interview Key Informants – Certified Licensed Buying Companies Managers (Eliho – Touton, Armajaro/Ecom Ghana, and Unicom)

1. What is the role of the company within the cocoa value chain
2. How many years have the company been working with the farmers
3. How have the certified farmers benefited from the standard and the company
4. What are the challenges within the standard
5. What do you think can be improved in the standard

2.4 Interview Key Informants – Cocobod District Cocoa Officer

1. Brief background about Cocobod responsibilities within the district
2. Cocoa officer's awareness about Rainforest Alliance Certification within the district for how many years
3. Clarifying how has the Rainforest Alliance standard affected cocoa production within the district either positively or negatively
4. Any recommendation for future improvements about the standard

2.5 Interview Key Informants – Cocobod Cocoa Extension Agents

1. Brief background about Cocobod extension responsibilities within the operational area
2. Awareness of Rainforest Alliance certification among farmers within the area

3. Any difference between certified farmers and Conventional farmers cocoa production in terms of cultivation practices.
4. Any knowledge about benefits certified farmers acquired from the standard
5. Why and how has the standard positively or negatively affected cocoa production within the area?
6. Awareness of any major or minor problems raised by the certified smallholder farmers about insufficient income and what could be the causes.

Annex 3: Themes and Category Table

RESPONDENTS	THEMES AND CATEGORY					
	Economic Aspect	Certification Knowledge	Benefits of Certification	Challenges of Standard	Improvements of the Standard	Difference between Certified and Non-Certified Farmers
Focused group discussion – certified smallholder farmers	Income from cocoa sold to LBCs	GAPs, shade tree management,	In-cash and in-kind premium	Simplification of RA standard	Simplification of RA standard	Regular internal farm inspection, proper farm management
Focused group discussion – conventional smallholder farmers	Income from cocoa sold to LBCs	None	None	None	-	No certification obligation.
Interview of key informants Certified Licensed Buying Companies Managers (Eliho – Touton, AgroEcom Ghana, and Unicom)	-	General knowledge about RA certified	None	100% internal farm inspection of certified farmers, Building Storage areas for farmers.	5% mapping, sketching of polygons Standard simplified to country-specific	Both in cash and in-kind premium for certified farmers.
Cocobod District Cocoa Officer	-		-		Cocobod must own the standard	The positive impact to certified farmers
Cocobod Cocoa Extension Agents	-	The positive impact to certified farmers in terms of fermentation of cocoa beans	-	-	-	No difference between certified and non-certified farmers

Annex 4: Breakdown of Data Analysis Table

Research Sub Questions	Methods to Use	Information to collect	Data collection tool	Source of Information	Data Analysis	Output Analysis
(a) Why did Smallholder Cocoa Farmers decide to join the Rainforest Alliance Certification Standard?	FGD,	Reasons for getting certification	FGD Checklist	Certified farmer groups	Qualitative analysis - Themes and Categories	List of reasons for getting certified.
	SURVEY	Reasons for getting certification	Questionnaire	40 certified Smallholder farmers.	SPSS –	Descriptive statistics (mean, modes, graphs, charts)
(b) In what ways have the cocoa production practices changed since Rainforest Alliance certified farmers joined the Certification standard?	FGD	Effects of certification on cocoa production practices	FGD Checklist	Certified farmer groups	Qualitative analysis - Themes and Categories	List of Effects of certification on cocoa production practices
	Semi-structured Interview	Effects of cocoa certification practices	Key informants checklist extension officers	Two Cocobod extension agents.	Qualitative analysis - Themes and Categories.	List of Effects of certification on cocoa production practices
	Survey	Changes in cocoa production practices	Questionnaire	40 certified Smallholder farmers.	SPSS –	Descriptive statistics (mean, modes, graphs, charts)
(c) What benefits have Certified Smallholder Cocoa Farmers attained after joining the Rainforest Alliance Certification Standard?	FGD	Benefits of Certification	FGD Checklist	Certified farmer groups	Qualitative analysis - Themes and Categories	List of benefits of Rainforest Alliance certification
	Semi-structured Interview	Benefits of certification for certified farmers	Key informants checklist for L.B.C's Managers	3 Licensed Buying Company Managers.	Qualitative analysis - Themes and Categories.	List benefits of certification.

			Key informants checklist extension officers	Two Cocobod extension agents.	Qualitative analysis - Themes and Categories.	Listing the benefits of certification.
			Key informants checklist district cocoa officer	District Cocoa officer	Qualitative analysis - Themes and Categories.	A list of benefits of certification.
	Survey	Benefits of certification	Questionnaire	40 certified Smallholder farmers.	SWOT analysis	Swot Matrix
1.4.2 In what ways do farming practices differ between Rainforest Alliance certified smallholder cocoa farmers and non-certified cocoa farmers and their production challenges?	FGD	Difference between certified and non-certified farmers production practices	Non- certified FGD checklist	Non – certified farmer groups	Qualitative analysis - Themes and Categories	List of production practices between certified and non-certified farmers.
		Challenges certified farmers face and as well as non-certified farmers face.	Non- certified FGD checklist	Non – certified farmer groups	Qualitative analysis - Themes and Categories	A list of challenges faced by both certified and non-certified farmers
	Semi-structured Interview	The difference in cocoa production practices.	Key informants checklist extension officers	Two Cocobod extension agents.	Qualitative analysis - Themes and Categories.	List of cocoa production practices.
	Survey	The difference in production practices	Questionnaire	40 certified Smallholder farmers.	SPSS –	Descriptive statistics (mean, modes, graphs, charts
	Survey	Challenges of Certification	Questionnaire	40 certified Smallholder farmers.	SWOT analysis	Swot Matrix

Annex 5: Transcribe of FGDs and Interviews

FOCUSED GROUP DISCUSSION – CERTIFIED SMALLHOLDER FARMERS

1. Brief Background about the Certified Group

Answer by the Group:

This group, thus the certified smallholder farmer. Its members are obliged to pay dues and other contributions promptly, attend general meetings, participate in decision making, abide by the constitution, code of conduct, and by-laws, participate in all activities of the association, provide accurate information to the association whenever needed, promote the association and its objectives, contribute to group unit and cohesion, and pay loans on time.

Any member of the association may resign his/her membership and any representative of a member organization or section may resign such position, by giving to the secretary of the association written notice to that effect.

The Management Committee may, by resolution passed at a meeting thereof, terminate or suspend the membership of any member, if in its opinion his/her conduct is prejudicial to the interests and objects of the association, PROVIDED THAT the individual member or representative of the member organization (as the case may be) shall have the right to be heard by the General Committee before the final decision is made. There shall be a right of appeal to an independent arbitrator appointed by mutual agreement.

2. What is the level of knowledge about Rainforest Alliance Certification?

- Rainforest Alliance Certification has the full knowledge about the following and ensures the right thing is done.
- To produce quality cocoa beans according to RA specification and standards
- To improve the livelihood of members by incorporating the management of other crops into their farming activities
- To organize meetings, training courses, and events.
- To take any lawful action, which would help it to fulfill its aims?
- To make rules and standing orders for categories of members and their rights.
- To take out insurance and short-term/long-term credits
- Joint procurement of inputs by negotiating more favorable prices when buying in bulk
- Joint (group) certification to reduce costs for the individual member
- To liaise and collaborate with COCOBOD and other concerned agencies
- To mediate disputes amongst members and others regarding any issues affecting cocoa farming.

3. Why did they (farmers) decide to join Rainforest Alliance certification and not another certification standard?

- To obtain income (premium) by selling certified beans
- To produce quality cocoa beans according to RA specification and standards
- To improve the livelihood of members by incorporating the management of other crops into their farming activities

- To obtain inputs to support my cocoa farm
4. How many years have they been implementing the rainforest Alliance standard
7years and above
 5. What are the challenges of implementing the standard?
The standard must be simplified and be made like adult education since most of the farmers are not educated and are aged.
 6. What benefits have they achieved from the standard?
 1. Training about how to cultivate our cocoa farms
 2. In cash premium, and in-kind premium some of the benefits include wellington boots, cutlass, and pesticides
 7. Do you receive in-cash premiums regularly from your licensed buying company?
Yes at the end of every certification.
 8. If you compare certified and conventional smallholder farmers who are better off in terms of cocoa production knowledge, income, and other resources and why?
Certified farmers because they receive support from their LBCs
 9. How has joining the Rainforest Alliance Certification changed the way of cocoa farming?
 1. It has increased my cocoa production and reduced pest and disease infestation
 2. Have obtained some knowledge in cocoa production.

FOCUSED GROUP DISCUSSION – CONVENTIONAL SMALLHOLDER FARMERS

1. Brief background about the group
A farmer group in Buabinso, a community in Dunkwa, Upper Denkyira East Municipal Assembly, consists of farmers of different ages and ethnic groups. These farmers have the right and the freedom to sell their products to any LBC of their choice. They, however, get their extension services from CHED and other agencies. Some of the services they enjoyed include, pollination, pruning, spraying of cocoa farms, and farm visits.
2. How many years have you been in the group?
12 years and above.
3. What are the benefits of a conventional smallholder cocoa farmer?
 1. Spraying of cocoa farms by the government for free
 2. Pruning of cocoa farms by the government for free
4. What are the challenges of a conventional smallholder cocoa farmer?

1. Some farmers expressed their grievances that, they can stay all year round without their farm being sprayed nor pruned.

2. Pollination was done however on a pilot basis.

3. During spraying some farms might not be sprayed due to insufficient pesticides or fungicides or fuel.

5. Do you receive any other in-cash or in-kind resources

No in cash resource but received in-kind resource such as the extension activities from Cocobod extension agents.

6. If you compare certified and conventional smallholder farmers who are better off in terms of cocoa production knowledge, income, and other resources and why?

1. Certified farmers because they receive a lot of support from their LBCs and other people.

2. Farmers receive whatever inputs and extension activities from Cocobod and LBCs. Certified farmers get additional support services and at the end of being certified get extra income (premium)

7. Why haven't you join the Rainforest Alliance Certification and what are the reasons?

1. Because the LBC we sell our cocoa produce to doesn't practice the standards of the certification.

2. Some of the farmers do not see the relevance of the certification.

3. Too much stress from the standard before you get certified, standard too rigid since most of the farmers are aged and not educated.

INTERVIEW OF KEY INFORMANTS Certified Licensed Buying Companies Managers (Eliho – Touton, Armajaro/Ecom Ghana, and Unicom)

1. What is the role of the company within the cocoa value chain?

AGROECOM

Only licensed buying companies are allowed to buy cocoa in Ghana. Ecom has an important role to play in the cocoa value chain. Ecom will ensure that members/farmers follow all requirements/standards concerning these activities: a. breaking pods. b.fermentation c. Drying d. Weighing of cocoa at the society shed e. Payment to the farmer f. Stacked cocoa at district depot ready for sealing g. Cocoa being sealed by QCC h. loading of a truck at the district depot. i. loaded truck dispatched to port. J. Cocoa received by CMC at the port

2. How many years have the company been working with the farmers
Eight years in cocoa certification.

3. How have the certified farmers benefited from the standard and the company

Certified farmers benefited from the standard from the profit of certification due to the increases in yield. However, Ecom provides service for the Ecom certified farmers through a. Training on GAP, GMP, GSP, and GEP. b. Assistance in setting up the nursery to grow seedlings c. Provision of good quality seedlings ie cocoa trees, shade/timber trees. c. Assistance in purchasing small equipment (cutlass, knapsack sprayer, wellington boots, coverall, pruners, etc). d. Supplying fertilizers and pesticides (on credit). e. Training for Ecom certified farmers on business skills set is of an important. f. access to boreholes that provides portable drinking water, access to health care, and education.

4. What are the challenges within the standard?

1. To conduct internal inspections for all farmers 100%. Taking polygons, mapping, sketching 10% from the sample.
2. Disposal of empty containers. Do not burn or bury but farmers should send it service provider

5. What do you think can be improved in the standard?

1. 5% mapping sketching and polygons.
2. Pesticides service providers should be tasked to visit farmers farms to recollect the empty containers

ELIHO TOUTON

1. Sourcing of high-quality cocoa beans from a stable farmer base
2. 5 years
3. I. Training and professionalization of the farmers
- II. Improvement in yield
- II. Improvement in livelihood
- III. Access to extension services
- IV. Access to inputs from our service center
4. I. Farmers unavailability
- II. Saturation of farming programs and commercial cocoa sourcing activities
- III. Farmers reluctance to undertake particular sections in the standard
5. I. Simplification of the standard
- II. Standard should be designed to fit the conditions of the local farmers.

UNICOM

1. The company mobilizes the cocoa from the farming communities through their agents called purchasing clerks who store the cocoa in smaller sheds and also ensure that the beans are thoroughly dried before bagging them into jute sacks the cocoa is then transported (primary evacuation) to bigger warehouses located within the cocoa-growing districts. In the warehouse the Quality Control Company (QCC) a subsidiary of Cocobod responsible for ensuring the quality of the beans to be transported to the various ports for export. QCC is to ensure that the cocoa in the warehouse which is being managed by the company is free from moisture, cocoons, flat beans, moldy beans, etc. and certify the beans by placing a seal on each bag of cocoa in the warehouse before it can be transported to the port (secondary evacuation). The company also has port officers at the various ports they are responsible for receiving the cocoa from the various districts and reporting same to the company's headquarters and Cocobod.

2. Eight years

3. The standard has helped the farmers in the areas of good agricultural practices for instance farming without cutting down trees indiscriminately, preparing the land for farming without burning, controlling weeds with cover crops instead of using dangerous chemicals like weedicides failing to adhere to these requirements they risk losing premium which helps them in diverse ways. Environmental protection farmers now understand the importance of protected areas like forests, rivers and streams, wildlife and game, etc., and their contribution to the protection of the ecosystem and their farms in the future. Improved labor conditions, health, and safety through the use of the standard workers of farm owners are provided with the required PPE's when working in the farms and observe the safety protocols in the standards to ensure the safety of the workers. Premiums are also put into good use to avoid wastage since the standard also requires the farmers to follow certain procedures in premium expenditure. The company also helps the farmers in diverse ways through training of farmers, community projects water and sanitation, the building of schools, libraries, computer labs, corn and oil Mills, child labor education, awareness creation, and sensitization, etc.

4. The standard should be country-specific since most of the things in it are not for developing countries like Ghana for instance storage of agro-chemicals the standard requires storage rooms with shelves and gratings for chemical storage, but farmers cannot afford to build these rooms individually to store chemicals which normally leads to non-conformity and suspension later may be desertification seizing premium.

Cocobod District Cocoa Officer

Brief background about Cocobod responsibilities within the district

Farmer's support services in General, multiplication of cocoa seedlings, and grading of cocoa beans.

Cocoa officer's awareness about Rainforest Alliance Certification within the district for how many years

6 years.

Clarifying how has the Rainforest Alliance standard affected cocoa production within the district either positively or negatively

Positively – Farmers have been enlightened and equipped with skills to practice cocoa farming in a socially acceptable and responsible way.

Any recommendation for future improvements about the standard?

1. All cocoa farmers should be trained in the certification standards.
2. The Cocoa board should, however, own the standards and these standards should be simplified to the farmer's level.

Cocobod Cocoa Extension Agents

Brief background about Cocobod extension responsibilities within the operational area

- i) To provide an efficient and cost-effective extension to cocoa farmers.
- ii) To assist farmers to acquire knowledge and skills to be able to adopt good agricultural practices (GAP).
- iii) To orientate and train cocoa farmers in basic farm economics for them to consider cocoa farming as a rewarding business.
- iv) To educate and encourage farmers to own cocoa extension.
- v) To encourage the youth to take cocoa cultivation.
- vi) To strengthen farmer groups to mobilize savings, access credits, and inputs.
- vii) To build the capacity of extension staff to deliver training to farmers
- viii) To build capacities for effective monitoring and evaluation.

Awareness of Rainforest Alliance certification among farmers within the area

Only a few know about it. This is as a result of those farmers selling their beans to LBC's that practices Rainforest Alliance certification.

Any difference between certified farmers and Conventional farmers cocoa production in terms of cultivation practices.

There is no clear cut of differences between conventional farmers and that of certified farmers. I, therefore, have a strong conviction that it depends on the individual farmer. There are instances whereby upon all the training these LBC's give to certified farmers, they don't practice them. On the other hand, some non-certified farmers take the little training the extension agents give them seriously, and they do practice them.

Any knowledge about benefits certified farmers acquired from the standard

Little knowledge about the benefits certified farmers enjoy from the standards. These include cash premiums, PPE's, farm inputs, etc.

Why and how has the standard positively or negatively affected cocoa production within the area?

Positively – the standard has helped farmers to desist from bad fermentation practices and this has gone a long way to improve the quality of beans produced.

Awareness of any major or minor problems raised by the certified smallholder farmers about insufficient income and what could be the causes.

The cash premium received by certified farmers puts them in an advantageous position over conventional farmers. One of the major problems they faced is that some LBC's delay their payments to farmers.