Certified cocoa production in Nyinahini, Ashanti region, Ghana

Farm characterization, farmers' perceptions and scenario assessment

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LIST OF ABBREVIATIONS

CODAPEC	Cocoa Diseases and Pest Control
AE/LBI	Agro Eco-Louis Bolk Institute
CAA	Cocoa Abrabopa Association
CMC	Cocoa Marketing Company Ltd.
CATIE	Centro Agronómico Tropical de Investigación y Enseñanza
CHTP	Cocoa High Technology Programme
COCOBOD	Ghana Cocoa Board
COFA	Cocoa Farmers Association
CRADA	Child Research for Action and Development Agency
CRIG	Cocoa Research Institute of Ghana
FFS	Field Farmer School
ICS	Internal Control System
JAS	Japan Agriculture Standard
LBC	Licensed Buying Company
MOFA	Ministry of Food and Agriculture
NOP-USDA	National Organic Programme
PBC	Produce Buying Co Ltd.
PC	Purchase Clerk
QCD	Quality Control Division
RA	Rainforest Alliance
SAN	Sustainable Agriculture Network
STCP	Sustainable Tree Crops Programme
TCC	Tropical Commodity Coalition

EXECUTIVE SUMMARY

This research examined how social differentiation due to migration and complex social arrangements affected both current cocoa cultivation practices and future implementation of certified production systems within the Ashanti region in Ghana. This study was carried out in the frame of the Nyinahini project supported by Agro Eco Louis Bolk Institute. The Nyinahini project aims to improve the status and income associated with cocoa production and thereby rendering it a more appealing agricultural activity. Furthermore, it aims to transform the trend of declining productivity of traditional plantations and the increased migration of young people from the rural areas. The project implementation entailed capacity building within local communities and also provided training and logistical support to farmers during the certification processes in order to more effectively implement Rainforest Alliance and Organic standards. Expected benefits from these schemes included the increase in cocoa productivity (due to the use of sound agronomical practices) and better product prices (due price premiums associated with certified production schemes) as incentives to young perspective farmers to continue farming. Structural differences between farmers however, demonstrated to be influential in the processes of adoption of these new certification schemes. This study thus aimed to map various challenges as related to inherent structural constraints and specific certification requirements. In this manner this research provides a unique insight into how social differentiation and certification standards interactively shape perspective development trajectories.

Empirical data collected included both focus groups and interviews of key stakeholders in order to capture prevailing perceptions of certification standards as related to different gender and land tenure systems both on an individual and community level. The study also included interviews of conventional farmers and local experts. The use of the structural historical approach allowed us to capture farmers' realities as shaped by complex social structures and relations of power which affected to a certain extent the choices farmers could take in terms of pursuing certification. Different farm types where found as a result of social differentiation; the main farm types included: 1) Traditional old landowner farmer 2) Active landowner farmers 3) Business farmers; who mainly belong to the Akan ethnic group, the descendants of the original settlers who typically had processes of capital accumulation, and, 1)*Abunu* farmer 2) Caretaker/*Abusa* farmer and 3) *Dɔ didi* farmer; who are migrants that belong to other ethnic groups mainly from the North, Central and Upper East region and who are involved in sharecropping arrangements in order to get access to land for a living.

It was shown in this thesis that the process of differentiation, to a large extend, has shaped cocoa plantations configuration, land management, productivity, profitability, and labour requirements. The structural differences between farmers influence cocoa production in different ways. Firstly, land management practices, especially seed sources of cocoa along with crop arrangements, and input use differed among farmers. Secondly, in terms of social structures, both; land tenure and labour arrangements, had pronounced impacts as it was the case for landowners depending on hired wage labourers while migrants depending mainly on their own family labour. Thirdly, the access and accumulation of capital has created distinct inequalities between migrant farmers in comparison with the landowner farmers.

Despite the existence of social inequalities, all of these types of farmers appeared to be motivated to be included in the recently implemented certification schemes. It is apparent that human agency is parts of the driving force that tipped the balance and inspired individuals towards achieving goals and transcending inherent limitations and existing structures. Enthusiasm to pursue certification schemes was found to be triggered by different mechanisms which also differed between migrants and landowners. For migrants the enthusiasm was triggered by farmer to farmer's interaction and personal experiences during the implementation of the new agronomic practices (pruning, thinning, application of chicken manure)

and by the knowledge they have received, which is perceived by the farmers to be of utmost importance and key deciding factor to be member of the Nyinahini group. For landowners the enthusiasm was reflected in the direct benefits they perceive from the new schemes. Moreover, processes of experimentation imply risk reduction by giving time to the project to show the benefits these new schemes will bring to the farmers. On the other hand, other sources of income affect the willingness to be completely dedicated and motivated to convert all the lands under these new systems as they are usually involved in other activities such as oil palm production for oil production and alcohol distillation, highly valued vegetables and/or off-farm activities.

Other sources of income play an important role in the process of adoption of the new certification schemes in different ways. For landowners their ideal scenario is a system in which pluriactivity is central; the idea of not being overly dependent on cocoa is important, even though, cocoa is culturally the most important crop for farmers as it represents a unique connection with their ancestors. For migrant farmers, the intercropping with plantain, cassava, cocoyam among other food crops represent a critical income source, which is paramount for their survival during times where cocoa is not (yet) giving any income. The significance of food crops for migrants is reflected in their ideal scenario, where leaving land for food crops is considered essential. Food crops represent an important source of supplemental income which gives farmers a weekly cash flow.

Furthermore, relations of power impact the decision making process underlying the enrolment and subsequent implementation of the certification schemes. In some cases, individuals (e.g. caretakers) do not have the freedom to decide upon the land but they are somehow 'forced' to implement the new practices which in the process of conversion are just being perceived as more labour demanding. Alternatively, other individuals may be keen on being inside the group but cannot participate because they have no freedom to decide to pursue certification. The inherent power structures dictate relations between landowners and caretakers and this can impact both the functioning of such farmers within the group as well as the certification processes due to the complex structures of power.

This study also mapped the key challenges for farmers to participate in certified cocoa production for different farm type groups. For migrants, these include the training, the competition of cocoa with food crops, increased labour demand, required long-term investments, and the lack of autonomy of deciding over the land. For landowners, challenges were mainly related to labour scarcity, competition with other activities, and social responsibility including supervision of caretakers in terms of ensuring compliance with required standards.

Considering the implementation of certification schemes, farmers and experts had different views about strategies to make cocoa farming more attractive to perspective young farmers. From farmers' perspective improving the basic community infrastructure such as piped water, electricity, and suitable roads for public transportation were considered to be important in order to motivate young people to stay in the communities. Experts on the other hand, stated that intensification is essential to address land scarcity, low yields and migration issues. In the context of land scarcity being an insurmountable constraint, intensification would allow farmers to acquire more income from cocoa plantations. However, farmers involved in different sharecropping arrangements tend to maximize land holdings rather than pursuing intensification as a main strategy to secure the long-term livelihood of their families. Thus, it is clear that future policies should be geared to overcome this apparent contradiction in production objectives.

1 INTRODUCTION

Cocoa production is the main contributor to the growth of the gross domestic product in Ghana (Ayenor, 2006a). Despite the importance of this crop for the country, poverty remains a major issue, restraining further development of the cocoa production sector. Some of the most important constraints are high labour costs and disinterest of young community members to continue farming. The young and the better educated tend to leave cocoa farming and migrate to urban areas in search of better job opportunities (Vigneri, 2007). Moreover, international trade prices are relatively low in comparison with local prices for food and fuel (Cameron, 2009). These factors in combination with aging cocoa trees, low yields, lack of local capital investments, and lack of incentives for farming undermine future perspectives for the cocoa sector.

In this context, the government has implemented policies to reform the cocoa sector since 1999; such policies have been focused mainly on increasing yields by promoting the use of agrochemicals and other inputs. The aim has been to increase productivity to keep the stature of Ghana being the world leading producer of premium quality cocoa (Ntiamoah and Afrane, 2008). One of the programmes that have been promoted is the 'Cocoa High Technology Programme (CHTP); known as 'High Tech' aerial-spraying of insecticides and fungicides for disease and pest control carried out since 2001 under the programme Cocoa Diseases and Pest Control (CODAPEC). Moreover, the government has also provided farmers with zero interest credit loans for purchase of fertilizers and pesticides (Dormon, *et al.*, 2004).

Quality has been the differentiation factor in cocoa production in Ghana (Ntiamoah and Afrane, 2008). However, the inclusion of new certification schemes not necessarily focus on quality such as Organic and Rainforest Alliance (RA) certification seem to be a promising niche market. These schemes have been promoted by various institutions, NGO's, and cocoa buyers in Ghana as an initiative for improving farmers' conditions and for empowering the local communities. The idea of including different certification schemes could help the cocoa sector to be recognized for something more than just 'high quality' and at the same time, may help the cocoa sector to gain access to new marketing niches. Furthermore, it is expected that farmers i) Benefit from premium prices of certified cocoa, ii) Increase productivity when applying organic inputs iii) Intensify the production after receiving training in sound agricultural practices and iv) Implement sustainable practices to improve soil fertility and biodiversity. However, the complexity of cocoa communities may demonstrate that implementation might be more difficult for some individuals than for others, as farmers form a heterogeneous group.

Although developing sustainable cocoa production systems is considered important in the fight against poverty and in promoting rural economic growth (David and Cobbah, 2008), it is unclear whether this will provide a clear incentive for young community members to stay engaged in farming. With these new

certification schemes in place, some farmers are transforming the traditional way of growing cocoa through different trajectories towards improving sustainability but others remain reluctant to change and/or are following the "high tech" type of farming promoted by the government.

According to Amanor (1994), the minimal use of inputs and the lack of access to labour represent 'the outlays of capital in cocoa rehabilitation'. Some authors such as Ayenor (2006a), argue that the so called 'organic by default' management practices prevail because some farmers cannot afford buying pesticides and/or because they are aware of the human health risk associated with excessive pesticide use. However, diversity among farmers demonstrates that not all farmers use minimal inputs. The heterogeneity of farmers makes it difficult to explore the reasons why some farmers do not implement sustainable practices or follow what development projects and extension workers recommend.

Historically, cocoa production has been a very important factor shaping the agrarian space in Ghana. Migration trends to cultivate new lands have been characteristic of cocoa farming. This process has been called 'pioneer frontier settlement' and explains how through the history of cocoa production, farmers have moved from one area to another, abandoning regions when yields decline. Complex social relations of production and land tenure systems have facilitated a process of social differentiation (Amanor, 1994). Therefore, the dynamics of these social structures have to be carefully studied. In this context, little is known about how structural differences between cocoa farmers can influence adoption of sustainable agriculture schemes. It can be hypothesized that interventions in sustainable cocoa farming work more effectively for some farmers than for others because of structural conditions or because farmers are driven by different motivations that are not considered.

Purpose of the research

In this research, a specific case, the Nyinahini project which is under the auspice of the Agro Eco-Louis Bolk Institute (*AE/LBI*), will be analyzed. In the context of this study it is pertinent to state that there are different systems in the communities where the project is taking place. In terms of management the following systems may be observed: conventional system, Organic/Rainforest in conversion, and High tech farming system.

The aim of this thesis is to explore the main mechanisms that shape the farming systems in the Nyinahini communities and how structural differences are influencing the adoption and motivation to pursue sustainable agriculture schemes. Why are certain alternatives implemented by some farmers and not by others? This research will explore the dynamic agrarian space where social differentiation can be observed and analyzed. This is especially relevant in Ghana, where patterns of land tenure[1] and access to resources

[1] The concept of tenure is a social construction that defines relationships between individuals and groups of individuals and the rights and obligations defined with respect to control and use of land (Economic Commission for Africa ECA, 2009)

have been important in shaping the current situation. We depart from the hypothesis that the differences between farmers are partly shaped by social differentiation.

Furthermore, in this thesis the expectations of local farmers involved in the project supported by *AE/LBI* will be elucidated. I will explore the standards being used by the Organic and Rainforest Alliance certification schemes. In this context, I want to examine how the structural differences between cocoa farming systems in Nyinahini interact with the implementation of these sustainable certification schemes. The opinions of farmers and experts describing the conditions that will render cocoa farming more appealing in the context of certified schemes will be complemented by a more in depth analysis of the different case studies.

This research is restricted by my inability to speak the native language, therefore the use of an interpreter (from the native language: Twi[2]) constrained the data collection. Furthermore, in only three months of research one can only begin to understand some of the underlying mechanisms that explain the trajectories the farmers follow and their motivation to join or reject specific sustainable certification schemes. Thus, the processes of face-to-face interaction between farmers were difficult to observe, but it was my intention to capture farmers perceptions by carefully mapping the process of intervention, the current practices employed to comply with sustainable standards, and the main motivations farmers place in these new schemes.

This research can contribute to the awareness of the key factors that need to be considered when implementing new certification schemes in the context of Ghana. Understanding farmers' perspectives of cocoa production is a prerequisite for identifying suitable interventions from NGOs and other actors involved in structuring suitable development options for this region. This information may also be used to determine future research priorities and to develop guidelines for more effective implementation of suitable production techniques and corresponding certification standards. Moreover, it can also help policy makers to develop programmes and incentives that will readily be adopted by prospective young cocoa farmers in the study area.

[2] Twi is one of the most used languages in Ghana. It belongs to the Akan languages. Although the official language is English, Ghana has 67 languages (SIL international). In the Ashanti region most of the people speak Twi.

2 THEORETICAL FRAMEWORK AND RESEARCH QUESTIONS

Far from being a family activity, cocoa farming embodies complex labour arrangements and social differentiation (Amanor 2005)

This chapter explores the theory of social differentiation and the nature of standards. I aim to provide a basic framework for my research with special reference to the Ghanaian case study region, where different agrarian development trajectories are partially shaped by access to and control over means of production, the prevailing community structure and other social relations among actors. Furthermore, I also include agency and prevailing motivations of individuals as part of the social engine that vitalizes individuals when deciding to implement new certification schemes. Finally, the theory of standards provides a frame of reference when we look at interventions based on new standards.

2.1 Social differentiation

Certification schemes, a form of intervention, are a new way of ordering production. Harriss (1982) argues that interventions profoundly affect agrarian societies. The author outlines three approaches to understand agrarian change. The first approach refers to the systems approach, which study farming systems, and the relations with environment, technology and demographic factors. The second approach, which includes neoclassical economics, focuses on the decision-making models and aims to understand not only the allocation of resources but also the farmers' responses to innovations. The third approach refers to studying structural and historical processes with the goal of enhanced understanding of the relationships of people in the production process, and the relationship between people and their environment. The structural/historical approach looks at the relationships between capitalism and forms of production. It is rooted in the theories of Marx and uses their conceptualization of processes of capitalism and creation of social classes.

The structural/historical approach is important to consider in the African context. Amanor (1994) argues that the study of agriculture in Ghana needs to be rooted in the dynamics of an evolving social structure, where tenure systems, labour relations and the historic role of cocoa production in the livelihoods of local cocoa farmers have to be carefully studied. Furthermore, gender and class inequalities are closely connected with landownership and control of resources (Robertson and Berger, 1986). Therefore, these studies point to the need to consider social differentiation as an important element in the African context.

My main interest in social differentiation was triggered by reviewing existing literature. My empirical investigation in the communities I worked in, aimed to improve my understanding of who the farmers are and how structural differences play a role in process of adoption of new certification schemes. I do realize that farmers are not isolated from external social and politic forces, but these different strata are not

analyzed in this research. My focus is a microanalysis of social differentiation in the farmers' community and its influence on farmers' trajectories.

When one aims to explore social differentiation, different dimensions of differentiation might be emphasized including: i) Structural differentiation ii) Differentiation caused by power relations and, iii) Demographic differentiation. Firstly, *structural differentiation* is rooted in Marxism, which studies production, capital and labour and the relationships between different social classes. Ellis (1993), when exploring the concept of social differentiation, mentions it is a process of pressure on farmers created by capitalist production relations, which results in a distinct form of production, and sometimes in two social classes; capitalist farmers and rural wage labourers. This is what political economists have called the 'social differentiation of the peasantries'. Secondly, *social differentiation caused by power relations* is more closely related with power and the influence or dominance of individuals over the others. Foucault (1997) mentions that not only dominant social classes but also relations of power are involved in human relationships *"a relationship in which a person tries to control the conduct of the other. I am speaking of relations that exist at different levels in different forms"*. Thirdly, *demographic differentiation* refers to natural process of family growth and the influence on farm size (Chayanov, 1966).

In Ghana social differentiation manifest many aspects of these three dimensions outlined above. For example, regarding the structural and power-relation differentiation, Amanor K., is one of the authors who have focused his research on the processes of social differentiation and its influence on agriculture. In one of his articles he elucidates the mutual shaping of land and people exploring how intergenerational relations are mediated by social differentiation. He concludes by saying that *the transformation of agriculture and development of agricultural modernisation is resulting in a complex process of social differentiation. Land is increasingly finding its way into the hands of a wealthier stratum of middle income farmers, and the rural poor are increasingly excluded from participation in agriculture* (Amanor, 2010).

Another author exploring social differentiation due to migration and including structure and power dimensions is Lobnibe (2010) who studied migrants moving from the Northern to the Southern part of Ghana. This author depicts the inequalities of the structures of organization in the Ghanaian context. In his article he quotes Meillassoux (1972) who stated that African kinship enables the older generation to exploit the labour of junior men and women. Moreover, he also quotes Marssey (1994) who argued that the structuring of the relationships-relations of production- which are unequal relationships, have implied positions of dominance and subordination.

Place and Otsuka (2000) explored the demographic differentiation, depicting the matrilineal inheritance system practiced in Ghana. They give an explanation of such cases in which land, in a matrilineal system, is bequeathed from a deceased man to his sister or to his nephew but not to his wife and children. They mention that in this system, it is obvious that wives and children have little incentive to help managing

cocoa trees, although it is becoming more common the practice of giving land as "gift" to wives and children to provide incentives to establish cocoa.

When talking about the structural approach, there has been substantial debate to delineate the importance of both structure and agency. Baber (1991) briefly describes the social theories developed around structure and agency; those developed as pure structuralism, minimizing the role of agency, others recognizing them as different elements and thus explaining constraints of human agency caused by structure as well as those by Giddens who visualized structure as result of human agency. Baber (1991) in her critique of Giddens' theory mentions that *Giddens seems to have exaggerated the ability of agents to shape the social structure*. Furthermore Sewell (1992) argues that Giddens was not specific about "structure" and stated that *"agents are empowered to act with and against others by structures"*. I believe that either structures are the result of human agency, or, individuals are constrained by structures, the later should be studied without excluding the ability of humans to modify the "status quo" to a certain extent. I do not want to neglect the fact that human mind is able to create or to evolve, but I believe we are also as Collins (2004) argues '*the precipitate of past interactional situations*'.

I find social differentiation important to explore when analyzing the farmer community in Ghana because, as many countries in Africa, resources and/or innovations are needed for improving local livelihoods. "*livelihoods are secure when households have secure landownership of or access to resources and income-earning activities, including reserves and assets, enabling them to offset risks, ease shocks and meet contingencies*" (Chambers, 1989 in Yaro 2002). However, social differentiation is not a theory that helps to fully understand the trajectories farmers decide to take, or the mechanisms or processes involved during the implementation of certification schemes. Thus, I do not pretend to deepen our understanding of social differentiation on a community level in a very extensive way. Nevertheless, the fact that this theory does not help to underpin key processes at each and every dimension does not exclude its use when analysing the farmers' community. Scott (1985) mentions that "*class relations are mediated by human experience and interpretation. Class does not exhaust the total explanatory space of social actions*. Furthermore, he argues that "*it is important to understand how structures are apprehended by flesh-and-blood human actors"*.

As in social enquiry, we cannot neglect human agency. I agree with Long (2001) when he argues that *"All forms of external intervention necessarily enter the existing life worlds of the individuals and social groups affected, and in this way they are mediated and transformed by these same actors and structures. Also, to the extent that large-scale and 'remote' social forces do alter the life-chances and behaviour of individuals, they can only do so through shaping, directly or indirectly, the everyday life experiences and perceptions of the individuals and groups concerned"*.

What happens when individuals shaped by social differentiation interact with each other and with new regulatory schemes? A set of structural conditions influencing the farmers' perception is present, but also an emotional situation triggering individuals to select from different choices and follow different trajectories and ways to cultivate the land. The concept of Röling (1997) of '*soft side of land*' has captured

my attention. This author argues that '*land use is not only defined by crop growth models, but is the outcome of human interaction and agreement, learning, conflict, resolution and collective action'*. It is indeed the case of Ghana where access to land has influenced process of social differentiation and at the same time social differentiation has influenced the way in which land is transformed. According to Lavigne-Delville (2004) "*the centrality of land in all dimensions of rural African life means that the analysis of land tenure issues should be broadened to include issues such as land use, agricultural production efficiency, conflict management mechanisms, power relationships and social position"*. Thus land and the process of production are important, to understand farmers and the implementation of new agricultural practices, in the context of new certification schemes. Ebanyat *et al.* (2010) argues that the '*Understanding of the drivers that have led to changes in land use in these systems and factors that influence the systems' sustainability is useful to guide appropriate targeting of intervention strategies for improvement'*.

2.2 Understanding farmers' trajectories

Understanding the social differences between farmers' communities can affect the interpretation of neoclassical economic analysis. The method of Marxist political economy is of interest to explain the underlying forces or drivers which push society as a whole in a particular direction (Ellis 1993). Elucidating such drivers is important because it helps to understand the types of diversity among farming systems. If we zoom in to see what happens within a community, we can observe as Pérez (2009) mentions that "*the community is constituted of dynamic and diverse livelihoods, constituted through the skills, knowledge and experience of the individuals*". This author argues that individuals struggle to satisfy needs and overcome constraints and risks, and individuals are constantly constructing their livelihoods through social practices.

If we look at livelihoods, we can observe that they are not only the result of on-farm activities but also of off-farm activities which provide a variety of procurement strategies for food and cash (Frankenberger, 1996 in Yaro, 2002). In this manner farmers may avoid dependence while creating autonomy and *room for manoeuvre* and adapt to changing conditions (van der Ploeg, 2008). Furthermore, livelihoods are dynamically constructed within interests, power struggles, rules and norms that are encountered in certain political and social arenas (Pérez 2009). Especially in the African contexts this is more palpable and articulated compared to settings where societies have not been so greatly influenced by social differentiation and social classes.

In understanding the diversity of farmers and their motivation towards new schemes there have been different ways of analysing them. For example: principal component analysis, econometric analysis, sustainable livelihood approaches and actor-oriented approaches. But, which approach should be employed in order to understand such trajectories? What are the underlying mechanisms that make farmers follow a specific trajectory? Jansen (2009) compares hard systems and soft systems. In his article, he explores how different schools in social science criticize the idea that all decisions taken by individuals can be measured or calculated. Furthermore, he mentions that "*preferences of farmers are not essences, but rapidly*

shifting outcomes of interaction". Jansen (2009) argues that "*emergent properties of cropping systems are the provisional outcome of a heterogeneous multiplicity of changing mechanisms, agencies, and circumstances*".

Focussing on interactions, Collins (2004) developed the theory of interaction ritual (IR). He argues that agency of social life is found in the face-to-face interaction, where intentionality and consciousness encounter each other. What this theory brought to my attention is that it includes emotions and consciousness in explanation of human actions. Collins argues "*Agency, which I would prefer to describe as the energy appearing in human bodies and emotions and as the intensity and focus of human consciousness, arises in interactions in local, face-to-face situations, or as precipitates of chains of situations*".

Although preferences rapidly shift with interactions, it is interesting to see how beliefs and emotions influence preferences and/or attitudes. An example is the research of Baah and Garforth (2008) studying farmers' attitudes towards cocoa production in Ghana. The authors include the emotions of individuals as part of the affective component (expressions of feelings), but also explore the cognitive (expressions of belief) and connative (expressions of behavioural intentions) dimension, finding that farmers believe cocoa is the future and is a dignifying activity. Furthermore, farmers believe they are helping the Ghanaian economy by producing cocoa. The authors found that all of these beliefs, feelings and expressions of behaviour are motivational factors to increase production, even though researchers believe price incentives are the only motivational factor. "*Contrary to what many researchers believe, farmers know what to do to improve production but would just not do it*" (Baah and Garforth, 2008). This is important and related to the intervention I am studying because intensification is considered to be the goal to achieve sustainability in the specific situation of the communities under study and according to different actors involved in supporting farmers.

2.3 Nature of Standards

Probably in other research one would like to look at standards as an imposed regulatory mode of production. However, in this research, the aims is not focus on the critique of standards or to develop a detailed assessment of their effectives in promoting sustainability or the degree by which these standards influence agriculture as such. Nonetheless, certain elements of the theory of standards could be applied to understand how farmers are responding to the new forms of governance in cocoa production.

With the development of alternative food supply chains and competitive niche markets new and emerging certification schemes have evolved. Rapid development of such schemes makes the situation for small farmers rather complex due to the difficulties they face when trying to comply with the imposed standards. Despite the challenges farmers face, it is expected that the supply of certified cocoa may have reached 100,000 tons in 2010 and that there will be an increase in demand for certified cocoa of up to 40% in all certification schemes in the near future (Copijn, 2009).

In the context of increased globalization and international trade, the creation of standards has created new disparities and inequities within the agriculture sector. "*Standards are all about power, the power to determine what shall be sold on the market, but also the power to count, to tax, to observe, to record, and to rule*"(Scott, 1998, in Bingen and Busch, 2006). Nevertheless, farmers are not considered as passive recipients of standards, but actively work with, and around, these emerging production standards pertinent to their commodities and/or services. This agency focus is relevant since it helps to understand how farmers perceive both current and future cocoa production systems in the context of new marketing schemes such as certified organic, Rainforest Alliance, etc. Farmers are considered then, not only as recipients of certain technologies but also as contributors to evolving knowledge (Lado, 1998). Even though we do not neglect that farmers may have limited possibilities to change the standards, adaptation and finding ways to comply with them are mechanisms, by which they can avoid being excluded. It is expected that in short-term, it is unlikely that farmers in Ghana will be excluded from global cocoa chain due to them not being able to comply with international certification standards (Laven, 2010).

I will look at the standards in order to understand how farmers interact with standards in communities where the intervention occurred within the past six months. Within the rural communities in the case study region, which are already shaped by land holding, labour availability and capital assets, we will assess how interventions of export-oriented production chains such as cocoa interact with differences among farmers. Especially in Africa, the long-term marginalization of agriculture has left smallholders poorly equipped to compete for this new market niches (Bingen and Busch, 2006).

Furthermore, the adoption of standards for sustainable farming systems may be seen as an outcome. However, this outcome always depends on multiple mechanisms and may vary according to the specific local context. Therefore, "*explanation of the social world also requires attentiveness to its stratification, to emergent powers arising from certain relationships, and to the ways in which the operation of causal mechanisms depends on the constraining and enabling effects of contexts"* (Sayer, 2000).

2.4 Objectives and research questions

The overall objective of this study is to elucidate how differences among farmers influence the process of implementation of certification schemes. Furthermore, to elucidate farmers' perceptions and conditions needed with the inclusion of certification schemes.

Specific research objectives are to:

- Identify and characterize underlying structural differences between existing farming systems in Nyinahini.
- Evaluate what strategies and conditions local farmers pursue to make cocoa farming more attractive when certification schemes are included.

- Determine how standards interact with the different structural conditions in the region and local farming strategies.

The research questions are:

1. What are the structural differences between the cocoa farmers in Nyinahini and what are the main driving forces on farmers to participate in certified cocoa production?

2. What strategies do farmers pursue to make cocoa farming more attractive in Nyinahini and what conditions are needed when certified cocoa schemes are included?

3. How do the structural differences between cocoa farmers in Nyinahini interact with the implementation of sustainable certification schemes?

3 METHODOLOGY

3.1 Research location

This research was conducted within the context of the Nyinahini project and it included the communities: Nyame Adom, Nfantifoam, Anansu, Kwabena Ofori, Kwabena Kwa and Krobom. These communities are located in the Atwima Mponua district in the Ashanti region, which is located 45 km from Kumasi, Ghana. The district covers an area of 894 square kilometers (see Fig. 3.1). The district Atwima Mponua is the leading cocoa production area in the Ashanti region. There are approximately 2000 farmers and the average farm size is 1.2 ha. The total annual production of this district is around 5000 ton of cocoa. It terms of social economic conditions, it is one of the most deprived districts in the Ashanti region. The people lack key infrastructure and social amenities such as hospitals, schools, piped water and adequate support by local agricultural extension services (Atwima Mponua Assembly, 2006).

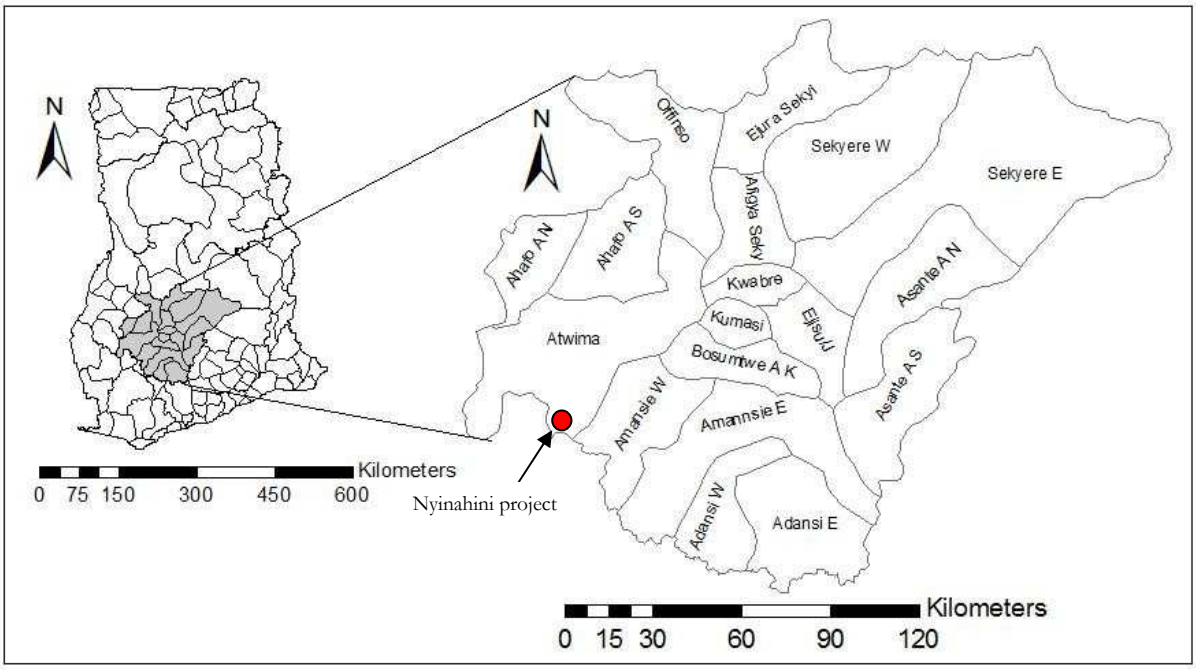

Fig. 3.1: Location of the research area, Nyinahini project, Ashanti region, Ghana**.** Modified from Osei and Duker, 2008

The district has two distinct rainy seasons from April to July and from September to November. The local landscape has an undulating topography and the vegetation is basically of the semi-deciduous type. The soils in the district have been classified as moderately to marginally suitable agricultural soil types. The local people are mainly Ashanti or belong to other tribes from the Northern part (mainly from Mole-Gagbon) and also Ewes, Grumas, Grusis and Mandes (Atwima Mponua Assembly, 2006).

Nyinahini baseline survey

According to the baseline survey carried out in Nyinahini project by *AE/LBI*, the main crops in Nyinahini are cocoa intercropped with plantain, cassava, yam or cocoyam. Oil palm, maize and cassava are also commonly grown. Cocoa provides a good source of income for local households. However, it is valued differently based on gender. Men perceive cocoa as the crop that provides more income, whereas for women, the most important crop is plantain. In addition, there is a relation between importance and control over income. The control over the income from cocoa is exerted mainly by men whereas women have almost total control over the income from plantain.

Additionally, animal production is also present in the communities, mainly chickens, goats and sheep and to a lesser degree pigs. Regarding the level of education, the majority of women have never been to school, while some of the men have finished their senior high school or even tertiary education (Vos, 2010).

3.2 Research methods

The primary focus for data collection was the Nyinahini project. Upon arrival in the study area, the first step was to familiarize myself with the research area. This included farm visits and introductions with key stakeholders and chiefs of the main communities. Following which, data was collected through focus groups, semi-structured interviews and case studies.

During the first week a focus group was formed, including the Field supervisor and the Field officers. The later are farmers selected by *AE/LBI* to be part of the Internal Control System (ICS) which is in charge to guarantee that the organic standards are being successfully applied. After an introduction and explanation of the purpose of the field study, an interview concerning the structure of the Internal Control System, and tasks of each person was conducted. Other information regarding the communities was compiled, as I was also interested in the history of each community and the different type of settlers that migrated to those lands during the past few decades. Therefore, questions regarding those aspects were posed to each field officer in order to reconstruct the history of each community.

The focus groups with the farmers were planned with the support of the field supervisor and the field officers who helped to mobilize the farmers to the different locations where focus groups were being carried out. The field supervisor helped to translate the conversations from Twi to English and vice versa for the focus groups and most of the individual interviews. These conversations were also recorded in order to collect complete narratives.

Due to the time required for the interviews and the fact that there was another student doing her research with the same farmers, finding another translator would have been ideal. However, a suitable person who was able to get across the message without placing his own interpretation could not be found. The

translation work thus had to be done with the help of the field supervisor who was indeed a key element for getting accurate information due to his communication skills and experience in participatory research, farmers' trainings and awareness and understanding of my research.

Technography

To explain the data collection and the analysis of the data for the research, I will use the three dimensions of a technography study -Task groups/Distributed cognition, Making/Materiality, and Construction of rules.

Task groups/distributed cognition

> *Research question: 1. What are the structural differences between the cocoa farmers in Nyinahini and what are the main driving forces on farmers to participate in certified cocoa production?*

In this dimension, I explored the farmers' motivations and the structural differences of their farming systems. The aim of this initial characterization was to assess the diversity of local cocoa farmers.

Characterization of farming systems:

There was a preliminary farm identification in terms of management in which the following farming systems were identified: i) Old traditional: a system with old trees, low yields and little or no management; ii) Conventional system: a system with low to medium investment, iii) Organic/Rainforest Alliance(RA)[3]: farmers who are interested in certifying their production and are employing sustainable practices according to the guidelines provided by *AE/LBI*, iv) Business farmers: farmers who are participating in the regional spraying programme run by the government; farmers pursue intensification measure in order to improve productivity.

It was the aim of this research to identify the structural differences between cocoa farmers and whether or not these differences were partially shaped by social differentiation. Additionally, we sought to analyze how this may influence the adoption of certification standards. The characterization of the farmers' community was performed through a typology. A total of 20 households, including all variants of management, were interviewed using different methods: semi-structured and open interviews and participatory observation. Interviews were not only performed with Organic/RA farmers but also with conventional and business farmers, and, including diverse land tenure systems:

i. *Abunu:* refers to the share cropping arrangement (contract) in which *Abunu* farmer establishes the cocoa plantation for the land landowner and at the end of the contract he can obtain half of the land he established as his own property.

[3] The Nyinahini project for organic/Rainforest cocoa production had been running for six months at the time the field work was conducted. Participating farmers were still in conversion. For organic, the conversion period includes a 3 year period without application of prohibited substances.

ii. Caretakers: sharecropping arrangement related to the *Abusa* system. In this system the cocoa plantation is already established and the caretaker is remunerated for the labour invested in weeding and harvesting of cocoa. The total production is shared with the landowner. Two thirds go to the farm landowner and one third to the caretaker.

iii. *'Dɔ didi':* means 'weed to eat'. A solely *Dɔ didi* is related to those type of farmers who are migrants, landless and have to borrow land for sawing food crops for their household.

iv. Landowners.

Data collected included: land acquisition, reasons to migrate, farm size, ethnicity, prevailing management practices, off-farm activities, process of decision-making, labour arrangements, implementation of certification standards and motivations for (not) participating in certification schemes. Based on this initial characterization, it was found that the key variable that explained structural differences between farmers was that of land tenure. According to these results, farmers were characterized in the following groups:

i. Landowner farmer with the subgroups: a)Old traditional farmer; b) Active farmer; and c) Business farmer
ii. *Abunu* farmer
iii. Caretaker and *Dɔ didi*, which include caretakers, caretakers/*Dɔ didi*, or only *Dɔ didi*.

In terms of management, it was found that all of these groups were using conventional or Organic/RA-based farm management practices, or both. Some farmers had some farms under conventional and other farms under conversion to Organic/RA management.

Identification of driving forces

To identify the driving forces, focus groups were employed in the five communities mentioned before. During these focus group meetings women and men were asked to participate separately in each session, in order to gather opinions from the different genders. In total 41 women and 61 men participated in groups and on average groups had 12 participants although some groups consisting of up to 20 people (see picture 3-1). The participants were asked their ethnicity and whether they were landowners, *Abunus*, or caretakers. They were further asked to express the main reason why they had decided to join the group of certified cocoa farmers in order to first establish the personal reasons of individual participants.

Picture. 3-1. Focus groups with women of Nyame Adom. The picture depicts my interpreter conveying my words to attending farmers and express farmers' narratives; which was a crucial aspect for my research.

After the collection of these views, categories were developed based on the first focus groups, where farmers expressed their motivations and the aspects that they considered important when joining the Nyinahini project. Farmers referred to increase of income, the training received, the fact that the new practices are improving the condition of the crop and the fact that they have received inputs for farming. Therefore the categories were selected to stimulate farmers to compare these pre-defined motivations. The categories were: 1. Increase income; 2. Reduce costs; 3. Training received; and 4. It is better for cocoa production and sustainability. The motivations were explained at every session and the participants were asked to rank them from the most important to the least important in order to characterize the motivations according to community and to gender.

Following this, farmers were asked to express the most important motivation according to a pair-wise ranking (Fig.3.2), this was done in order to prompt farmers to reflect on different motivations, since typically the immediate and most intuitive response was that they needed to increase income. By doing the pair-wise ranking, farmers were encouraged to consider different benefits. For example, looking at the first motivation (Increase income), they were asked to rank as follow: between 1) Increase income and 2) Reduce cost, which is the most important motivation; between 1) Increase income and 3) Training received, which is the most important motivation?, and so on. The number of times a motivation was

selected constituted the score of each motivation. In this example, farmers ranked as more important 'Training received' when they compared it with all the other options (higher score).

	1.Increase income	*2.Reduce costs*	*3.Training received*	*4.It is better for cocoa production and sustainability*	*Score*	*Ranking*
1.Increase income		2	3	4	0	4th
2.Reduce costs			3	4	1	3rd
3.Training received				3	3	1st
4.It is better for cocoa production and sustainability					2	2nd

Fig. 3.2: Example of pair-wise ranking exercise (Community: Kwabena Ofori-Men group)

Although the focus groups developed in the first weeks of the research gave a good overview of the farmers' motivations, the follow up individual interviews were crucial to analyze farmers' motivation. Farmers were asked to express the motivations to (not) join the certification schemes with open interviews, allowing farmers to identify the process of conversion and the meaning they attribute to the new practices. Furthermore, it was possible to understand the learning processes that have been going on in the study area through the trainings and the analysis of decision making processes that together helped to identify the driving forces according to every community by taking into account gender differences and different farming systems: *Abunu*, Landowners and Caretakers/*Dɔ didi*.

Making/materiality

Research question: 2. What strategies do farmers pursue to make cocoa farming more attractive in Nyinahini and what conditions are needed when certified cocoa schemes are included?

In this dimension, it was of interest to examine the way that farmers produce their cocoa within emerging certification schemes, the practices they are implementing to manage fertility and control for pests and diseases. Based on the practices of making, it was possible to see in what contexts agronomic and socio-economic strategies renders the certification process of cocoa more appealing to different types of farmers in the Nyinahini project.

After developing a general understanding of the different types of farmers, specific case studies[4] were elaborated to select crucial elements for explaining the differences in terms of making and conditions between systems. The following farm types were selected for the case study region: Landowner Active farmer, Landowner Business farmer, *Abunu* farmer and Caretaker/*Dɔ didi* farmer. Open interviews and

[4] A case study is being defined as '*the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances*' (Stake, 1995).

participatory observation techniques were used to gain a better understanding of the individuals selected for case studies. Hypotheses were constructed and theory was used to understand how certain transformations may work for some farmers but not for others. This process of selection of case studies was challenging due to language obstacles and time limitations. An attempt was made to select a representative of every farmers' type. However, the selection process was subjected to time availability and the individual's willingness to participate in the study. The objective was to depict the farmers' types in a realistic manner; thus, it was not the intention to create rigid categories.

Apart from understanding the farming practices, the case studies were used to find out if there were differences in the way different individuals would implement such practices and if the conditions required to do so would vary situationally. To stimulate farmers to think about the conditions they deemed necessary, in every case study, a participatory budgeting tool (Fig. 3.3) was used to prompt farmers to visualize their farm and think of possible scenarios to make cocoa under certification schemes more appealing to them.

Scenario 1	***Family Size***			***Farm Size***			
	Expected Yield						
	Replanting	**Pruning**	**Pest management**	**Weed management**	**Harvest**	**Soil fertility**	**Unit**
Labour							People
Inputs							
Seeds							Bgs
Manure							Bgs
Training							
Others							

Fig. 3.3: Example of tool to evaluate scenarios with farmers
Modified from Examples of Participatory Budget in Galpin, M.*et al.*2000

Farmers were also encouraged to reflect upon the conditions that would be required to make strategies viable for them, with the emphasis being on labour and input demands. In addition, the conditions for making cocoa more appealing in the context of implementation of specific certification schemes were also evaluated in terms of: i)Economic (e.g. household income, expected expenditures); ii) Social (e.g. required family and community support, required training and technical support for farmers, farm labour required) and iii)Bio-physical (e.g. current and projected yields and input requirements) aspects.
In order to understand individual conditions for these different farmers a diagnosis study[5] had to be carried out as well to characterize the current situation of every farming system. Therefore, data related to

[5] Diagnosis-analysis was created in the The Institut National Agronomique Paris-Grignon (INA P-G), a French grande école that is part of the AgroParisTech. The Diagnosis-analysis was created as a method to apprehend and analyze the complexity of the object of study (agrarian situation). It differs from the statistical analysis in the way the direct observations, and open interviews

farm economics, income, labour and expenditures was collected to compare the performance of the farming systems.

Concerning the strategies, besides the personal strategies obtained from the case studies, the focus groups described before were also used to encourage the farmers to think about strategies for making cocoa production under certified schemes more appealing to them. In this context, special emphasis was placed on having them list strategies that should encourage young people to remain in the communities and continue farming. This question enables the collection of opinions of separate gender groups. Furthermore, to have a reference frame in terms of assessing strategies developed by the farmers, experts from Rainforest Alliance[6], AE/LBI[7], Sustainable Tree Crops Programme (STCP)[8], and an Organic agriculture consultant[9] were interviewed to evaluate proposed strategies for implementing sustainable standards.

Construction of rules

Research question: 3. How do the structural differences between cocoa farming systems in Nyinahini interact with the implementation of sustainable certification schemes?

In this dimension, the objective was to determine how the structural differences between cocoa farming systems in Nyinahini interact with the implementation of sustainable certification schemes. To examine this, the first two research questions were applied to understand the mechanisms that make farmers follow different trajectories. If farmers cannot change the rules, they find the way to adapt to these new practices. Although it is possible that farmers of all different farming systems might take interest in certification, it is also necessary to consider that the different farmers have particular motivations and constraints when applying or implementing such standards.

There are rules that change farmers' perspectives, such as the prohibition of herbicides, fungicides and pesticides. The hypothesis was that due to the structural differences between farm types the difficulties of implementing the sustainable standards would vary, hence a *Dɔ didi* farmer might have more constraints than the landowner farmer because they utilize family labour and do not have the means to hire labourers to weed the farm without the use of herbicides (as is required in organic farming). On the other hand, it might be possible that Caretakers/*Dɔ didi* were not interested about sustainability because they do not own the land and hence long-term soil fertility and overall biodiversity would not be their priority. In the context of this field study it was hypothesized that different mechanisms are important in determining the

are conceive to support such analysis. The characterization is based on structure and function of the agrarian system and in the socio-economic characterization of the farming systems (Brun, s.a.)

[6] MSc. Christian Mensah, Representative of RA in Ghana
[7] Agr. Eng. Israel Kuadzi, Field Supervisor of AE/LBI
[8] MSc. Nana Fredua Agyeman, STCP
[9] MSc. Jorge Echeverri. Ex professor of CATIE and Organic Consultant for the cocoa industry in Central America.

courses of actions taken by the farmers; mechanisms that are influenced not only by the inherent socio-economic structure but also by the agency of individuals. In Fig. 3.4, I am depicting the research within technography. In my research the context is paramount to understand how structural differences between farmers influence farmers' trajectories. The context is related to farmers as individuals but also to their functioning within the collective community as related to structural differences among farmers, land tenure and social differentiation. In this manner I want to elucidate how the context is influencing the trajectories farmers follow, which implies identifying underlying mechanisms that are embedded in farmers' reality. The outcome of the interaction between context and mechanisms shape the different trajectories that farmers may opt to pursue in terms of adoption of a specific certification scheme.

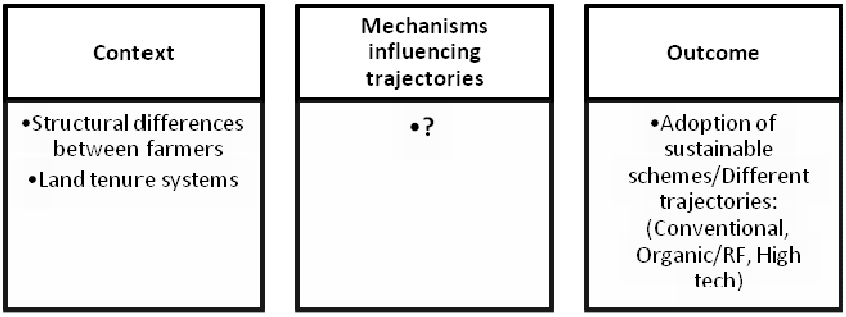

Fig. 3.4: Context-Mechanisms-Outcome

4 CHARACTERIZATION OF THE FARMING SYSTEMS IN NYINAHINI

This chapter aims to explore the diversity among farmers, exploring the underlying structural differences between existing farming systems in Nyinahini. The agrarian system is embedded in complex relations derived from social differentiation and therefore a typology of farmers based on this criterion is being implemented. I will describe how the land tenure system is an important factor to consider when looking at the processes of making and the context in which the implementation of certification schemes is taking place.

4.1 Land tenure systems

In Ghana there are different systems of land tenure that have been the result of different dynamics in the Ghanaian society and the struggle for access and control over available farm land. Takane (2002) in his study of cocoa farmers in the South of Ghana showed that land accumulation by capitalist farmers in the earlier years was possible because of the availability of land. Takane mentioned that around 1940 the acquisition of land by migrant farmers spread to western Ghana and due to subsequent transfers and inheritance, land became scarce.

Furthermore, the development of contracts such as *Abusa* and *Abunu* made access to land possible to migrants from different lineages. The cocoa plantations were managed in return for a share of the proceeds from the land in which landless migrant labourers and tenant farmers participated (Hill, 1963, Amanor, 1994). Hence, Takane (2002) argues that the distinct differentiation between capitalistic and landless farmers did not evolve as a 'class division', as migrants could have access to land. Nevertheless, the unequal relations cannot be neglected, albeit that the division in these two categories was not fully developed.

When studying the processes of access and management of land, Takane (2002) mentioned that the share-cropping arrangements are often unfair and inequitable. He explores how in Ghana the land rights have influenced the farmers' willingness to invest capital and labour in their farms, and how investment became a strategy to increase the control over the land. Firstly, in the *Abusa*[10] system the cocoa plantation is already established and the caretaker is remunerated for the labour invested in weeding and harvesting by him sharing the yield with the landowner: two thirds go to the farm landowner and one third to the caretaker. With the *Abunu*[11] system, landlords and caretakers share the yield equally because the person willing to work under *Abunu* establishes the cocoa plantation for the landowner. There are also caretakers working for absentee landlords who, in addition to managing their own cocoa farms, take care of

[10] Also called *Nhwesoo* or caretaking of farms.
[11] Type of share contract called *Yemayenkye* (do and let us share)

neighboring farms (Ayenor, 2006b). Goldstein and Udry (2008) mention that individuals who have powerful positions within the local political hierarchy tend to have more secure land tenure rights. Therefore, they invest more in soil fertility and crop productivity and thus may also have higher yields and income from their systems.

4.2 Origin, ethnicity and land landownership within local communities

There is a diverse constitution among farmers' communities in the study area (Table 4.1). Kwabena Kwa is the oldest community. Settlers came around 1900 and named the village in honour of the first man that settled in this region. Historically, Akan have been the dominant ethnic group within both this community and in Anansu as well.

The second community, Nyame Adom, which means '*Mercy of God*', received its name because when the people arrived, they found the land to be very fertile. The first settlements occurred in 1930 with people coming mostly from Central Region. In the focus groups we found mainly migrants with the majority of farmers coming from the Central and Northern region (34% and 31% respectively). The community is mainly divided into caretakers and landowners.

Five years later, in 1935, people from the Central region migrated to what is now Nfantifoam; they started to clear the land[12] and grow crops using shifting cultivation techniques[13]. In the focus groups we found that the community has a relatively high percentage of migrants from Upper East (26%) and Ashanti (19%) regions while the original migrant account for 22% of the population. The majority of the farmers are landowners (47%) followed by landowners who are also caretakers in other farms (23%) and *Abunu* (20%).

In 1950 Kwabena Ofori, an Ashanti man, came to the region and settled down in what is now the community named after him, 'Kwabena Ofori'. Nowadays, this community is mainly populated by people from the Eastern region and migrants from the Upper East (40% and 30%, respectively). In this community, the land tenure is diverse, as we found landowners (37%), landowners & caretakers (21%) and caretakers/*Abusa* (21%).

In Krobom it was not possible to find out the origins of the settlers. However, nowadays a considerable number of farmers are from the Eastern region. In terms of land landownership, most farmers are landowners (62%), followed by landowners and caretakers (27%).

[12] Forest was the dominant vegetation type when the first settlers arrived to these lands. The process of establishing a cocoa plantation implied cutting down forest and clearing areas for food crops and cocoa plantations.

[13] Shifting cultivation is considered to be an extensive system of farming. The indigenous system of bush fallow provides some benefits concerning soil fertility. Nevertheless over time farmers have shortened the fallow period, diminishing the recuperation of the nutrient status of the soil (Hunter, 1961)

In respect to ethnic groups, interviews were conducted with many Akans who were usually the landowners of the land, and *Abunu*s and caretakers from other ethnic groups Sefwi, Fantis, Ewes, Brongs, Akuapems, Mamprusis and Grumas.

Table 4.1. Origin and land tenure systems of farmers in the focus groups

	Anansu %	**Nyame Adom %**	**Nfantifoam %**	**Kwabena Ofori %**	**Krobom %**
Regions of origin					
Ashanti	78.6	20.0	18.5	10.0	9.7
Brong Ahafo	0.0	2.9	3.7	5.0	3.2
Central	7.1	34.3	22.2	0.0	9.7
Eastern	0.0	5.7	0.0	40.0	58.1
Greater Accra	0.0	0.0	3.7	0.0	6.5
Northern	7.1	31.4	11.1	0.0	0.0
Upper East	0.0	0.0	25.9	30.0	3.2
Volta	0.0	0.0	0.0	0.0	3.2
Western	7.1	5.7	14.8	15.0	6.5
Main ethnic groups	Akans	Fantis, Akans Kusasis	Mainly Fantis, but also Sefwi, Brongs Krobos, Mamprusi	Krobos, Akans, Brongs and Grumas	Krobos
Landownership					
Landowners	81.8	43.2	46.5	36.8	62.1
Landowners &caretakers	0.0	0.0	23.3	21.1	27.6
Caretakers/*Abusa*	9.1	48.7	9.3	21.1	3.5
Abunu	9.1	8.1	20.9	15.8	6.9
Abunu and caretaker	0.0	0.0	0.0	5.3	0.0

Data based on nine focus groups including a total of 102 participants (Women n=41, Men n=61),

4.3 Social structure and diversity

Adjei-Nsiah *et al.* (2007) mentioned '*Societal complexity simply cannot always be captured in simple categorizations*'. There is a categorization of farmers that is being used in Ghana, and it is very much based on dividing the farmers into small, medium and rich farmers. Nevertheless as Chamberlin (2008) demonstrated, smallholders in Ghana are not a homogeneous group. It is important to analyze the relationship between farmers as individuals while considering their access to and control over land and labour as related to the corresponding local land tenure systems. The categories I use to describe farmers are based on land tenure systems as seen in Table 4.2. Landowners, *Abunu* and Caretakers/*Abusa* and *Dɔ didi* will be characterized. The intention of such characterization of the farmer community is not to make static categories since communities are constantly shaping their own reality. Nonetheless, by grouping the farmers in a certain way, one can understand specific characteristics more effectively which will help to explore the community and its inherent diversity.

4.3.1 Landowner farmer

The landowner farmer is the first farmer category. The size of the farms varies from 4 to 30 acres. This fairly wide range is explained by the diverse way of land acquisition and heritage. For instance, some of the farmers were able to acquire more land compared to others settlers and some have not yet given land to their descendants. Additionally some were also exploring *Abunu* or caretakership in order to acquire more lands. Thus, the farm size of old farmers that have not transferred much land to their children or that have bought or acquire land may range between 6 and 30 acres. Young farmers who inherited land from their family might have smaller farms ranging between 4 and 15 acres.

4.3.1.1 Old traditional farmer

Among the landowners, the old traditional farmer is a very important group within the local farmers' community. This category is dominated mainly by Akan ethnic group. As explained before, the old communities (Kwabena Kwa and Anansu) were formed mainly by Akans. These farmers were able to accumulate land and capital with the cocoa plantation. Over time, and due to the processes of migration of the descendants to the cities, the remaining farmers grew old and cocoa plantations became abandoned. These people gave opportunity to new generations, initiating tenant-caretaker relationships to establish and manage the plantation and harvest the cocoa. In this way they were also taking advantage of socio-economic changes within their community.

> *Ama Kufuor is 70 years old; she is an Ashanti woman who inherited land from her father. Although she has 9 children, none of them live in the village with her. Due to this reason, she works with 2 caretakers who are in charge of her two farms (11 and 10 acres) from which she will only harvest 10 bags this year because there were floodings affecting the productivity. Usually she does not get more than 2 bags/acre.*

Currently the old traditional farmers are not looking to increase yields as they live happily with the way things are, especially if they know that at the end of the year, they will receive an income from the plantation without having to worry about investing too much effort or capital. Sometimes, if they have the means, they provide the caretaker with inputs, but sometimes they do not. Cocoa farming is perceived to provide an income source for their retirement.

4.3.1.2 Active farmer

The descendants of the first settlers that were interviewed have smaller farms (4-15 acres). Although some of them have acquired new farmland through cultivating part of the family land others have been involved in sharecropping arrangements such as *Abunu*.

Akwesi Owusu is a good example of an active farmer. This farmer has three plots of land, the first one he acquired through heritage from his father (2 acres) the second one he acquired through Abunu (2 acres) and the third plot he bought (4 acres). He is a dedicated conventional farmer and has means to invest in his production system. For the establishment of his plantation he uses hybrid seeds, fertilizers and pesticides. In one of his farms he has plantain, cassava, oranges, pineapple and bananas (2 acres). In the other two farms he has cocoa; one plantation of 9 years old and the other one recently established.

In this category, different patterns of income diversification can be observed. For example, some farmers grow oil palm (*Elaeis guineensis*) for the production of palm oil, and others use it for the production of alcohol. Some farmers diversify the cocoa system by also growing plantain (*Musa paradisiaca*), cassava (*Manihot sculenta*), yam (*Dioscorea sp.*) and cocoyam (*Colocasia esculenta*), while others may also grow rice (*Oryza sativa*), maize (*Zea mays*) and vegetables such as tomatoes (*Lycopersicum esculentum*), eggplant (*Solanum melongena*), okra (*Corchorus olitorius*), pepper (*Piper nigrum.*), among others. Some of these farmers sell their produce to brokers (from Accra, Takorade, and Kumasi) who come to buy local products at the closest market (Bibiani market) while in some cases the brokers may come to the farm itself. Farmers also diversify their incomes by engaging in off-farm activities; for instance, some have other jobs as teachers, clerks, drivers, and store keepers, amongst others. These differences in income sources reflect the different strategies farmers have to sustain themselves besides cocoa production.

Regarding labour, there are differences between farmers that have larger or smaller farms. Farmers with smaller farms usually hire between one to three labourers for special activities. On the other hand, farmers with larger farms usually hire between three to eight labourers seasonally. These workers are typically contracted for specific activities such as weeding or fertilizer application. There are cases where farmers can hire labourers for the entire year for a certain salary.

4.3.1.3 Business farmer

The landowner business farmers perceive cocoa cultivation as a business. Therefore, they make considerable investments in the crop such as the use of hybrid seeds along with an increased use of fertilizers and pesticides.

Owsu Mensah is one example of business farmer. He lives with his 5 children and his wife. He is trying 1 acre with organic management and 9 acres conventionally managed. Besides these lands, he has 24 acres of oil palm. Using labourers for harvesting, weeding and soil fertility he is able to produce 10 bags of cocoa per acre which he sells to PBC.

The business farmers have usually higher education levels than the other type of farmers. They have frequent contact with local extension services which help them to get knowledge pertaining to intensification, sound agronomic practices, and pest and diseases control. This type of farmers is

constantly looking to improve productivity levels, and they are willing and able to invest capital to achieve this goal. During the establishment of the cocoa plantation, they use hybrid seeds to assure they will have highly productive plants and pest, disease and weed control tends to optimal and orchards are weeded at least three times per year. The removal of chupons (young vertical shoots), pruning and thinning of trees is also routinely done. Farmers regularly monitor their systems to observe the incidence of pests and diseases, and use scheduled application of fungicides and insecticides in order to control major problems in cocoa such as black pods, mistletoes, and capsids. Diversification for self consumption is not as crucial as for the other type of farmers, but they might use other plots of land to grow market vegetables that are very profitable including tomatoes, okra, and pepper, among others or crops such as oil palm.

4.3.2 Abunu farmer

This group of farmers is very diverse. Most of these farmers are migrants from Eastern, Central, Upper East and Northern regions. In this case there are contracts that allow farmers to take half of the land after the cacao plantation is being establishing (4-10 yrs). The *Abunu* systems requires a certain amount of capital to pay the landowner since the landowner expects at least some money and gifts to reward him for sharing the land.

Regarding the farm size of this system, most of the farms are 0.5 to 4 acres considering that half of the farm area remains with the previous landowner at the end of the contract. As *Abunu*s comes to work in someone's farm, family labour is very important because it is their main resource considering the available capital they have. Nevertheless, for seasonal activities they hire sometimes between one to three labourers to help them in the farm.

> *Efia is a Brong woman from Ofori who acquired her first farm of 1.5 acres through Abunu. To acquire more income, she got involved into sharecropping contract where she is currently working as caretaker in a farm of 3 acres to sustain her three children.*

Abunu farmers use seeds mainly collected from other farms (open pollinated) although sometimes hybrid seeds may be used. This depends on the capital available to the farmer and the disposition of the landowner in helping the *Abunu* during crop establishment. If the landowner has seeds he provides them, but if not the *Abunu* uses seeds from other farms. The way *Abunu* establishes the plantation is not so relevant for the landowner. Most of the times (especially for absentee landowners) the only thing that the landowner wants is to see the cocoa trees mature and come into production. Although the *Abunu* is responsible for the farm until the end of the contract, it is difficult for him to independently decide on land management practices, because he operates under the auspice of 'the landowner'.

Yaa Ofori is a Kusasi man who lives with his 9 children and his wife in the community of Nyame Adom. He was under an Abunu contract for about 9 years. His farm of 9 acres is managed organically but he also has other lands he has not yet decided on if he wants to convert them as well. He also grows plantain, cassava, yam and pineapple to sell in the market but also for home consumption. Additionally, he has some sheep that he sells to buyers that purchase them on farm during the months from October-December.

Besides cocoa, farmers may plant plantain, cassava, cocoyam, and maize or rice, partly for home-consumption and/or for selling in the local (Bibiani) market. These crops provide income, food and shade/protection for the young cocoa trees and thus help farmers to sustain themselves during the time when the cocoa crop is not yet producing. With this supplemental income, farmers are able to get money to finance new plots of cocoa. Farmers can also incorporate livestock as another source of income. This is for instance, the case of farmers from the ethnic groups Fantis and Kusasis who rear sheep or goats. For other ethnic groups like Akans (people from Anansu and communities close to Tano river), rearing animals is considered taboo due to some people beliefs while animals might also destroy the young cocoa trees according to the farmers interviewed.

4.3.3 Caretakers/Abusa

This category comprises the farmers that do not own any land[14], therefore they have to find landowners who are willing to provide land to them for sharecropping. If the migrant is lucky he/she can sometimes get land to work as caretaker of the farm where the landowner is still living in the community or in farms of absentee landowners who live in the cities. Farmers can work in established cocoa plantations and then they divide the income from the activity into three parts. Different from *Abunu*, this type of farmer will never be landowner.

Abena Bitris belongs to the Brongs ethnic group. She and her husband have been caretakers for 2 years. She mentions that the landowner of the land instructs her on what to use in the cocoa plantation. Previously they applied Ridomil, but now that the landowner wants to be organic, they are applying what he is suggesting.

The caretakers are in many cases involved in Dɔ didi plots to grow food crops for self consumption, and as source of extra income as they work in plantations that are already established and in which food crops may not be possible to grow.

[14] Some might have family land in the place of origin and even if they do not own land they are entitled to land (Onumah, 2010)

4.3.4 Dɔ didi

Dɔ didi means "*weed to eat*". This is, in fact, what the sort of arrangement means, as this type of farmers is constituted by migrant population who do not have access to capital nor do they possess any land. Therefore, they negotiate with a landowner to obtain a piece of land through lending in exchange for their labour. In this way, the migrant can start growing their own food for the farmer and his/her family.

The *Dɔ didi* farmer grows food crops such as cassava, cocoyam, plantain, etc. He can benefit from the land during the cocoa establishment, in which they grow all the food crops. "*As you are going to take your food stuff you can even sell them. Therefore, the landowner will have to be sure that the cocoa also is being taken care of so it grows well. If the landowner finds out that the Dɔ didi is not managing the plantation properly, and is mainly investing in his food crops he can even charge him for that. Then he takes the food stuff and hires some people to work on that particular field"*

Dɔ didi can sell part of their produce as a source of income from farm activities and part of this income will be invested to buy inputs for the food crops (cassava, plantain, cocoyam) for the next year. The *Dɔ didi* farmer does not use any pesticide for these crops, but might use some for the production of maize in the offseason. During the time cocoa trees are being established, food crops can be there and may be continued to be cultivated for 3-5 years while the cocoa is already mature. The landowner can allow the *Dɔ didi* farmer to stay until cocoa trees have grown.

Table 4.2. Farm typology of cocoa farmers in the Nyinahini project

	Landowner old traditional farmer	***Landowner active farmer***	***Landowner business farmer***	***Abunu farmer***	***Caretaker/Abusa***	***Do didi***
Key ethnic and land tenure characteristics	Many Ashantis, mostly Akans. They have accumulated both land and capital.	Many Ashantis, mostly Akans. They have accumulated both land and capital.	Many Ashantis, mostly Akans. They have had accumulated both land and capital.	Most of them are migrants. Sharecropping contract (4-10 yrs) with future access to land ownership.	Most are migrants from Central, Upper East and Northern region. Sharecropping system, but ownership of the land is not possible.	Most are migrants from Central, Upper East and Northern region. It is perceived as a new arrangement in the area due to the land scarcity. Leasing land for food crops in exchange of labour (weeding).
Patterns of Diversification and pluriactivity	-Off-farm income	-Alcohol distillation from oil palm. - Plantain, cassava, cocoyam for commercial purposes. - Some grow rice or maize. -Some grow vegetables (tomatoes, eggplant, pepper, Okra, pineapple) -Other jobs (traders, vendors, provision stores, teachers, purchase clerks) -Some have animal production (sheep, goat, chicken).	-Alcohol distillation from oil palm. -Some grow vegetables (tomatoes, garden eggs, pepper, Okra) -Other jobs (traders, vendors, teacher, provision stores).	-Diversification of the system with plantain, cassava, cocoyam, maize. -Vegetables for home consumption (tomatoes, garden eggs, pepper, Okra) - In the case of the Fantis and Kusasis they also include animal production (sheep, goat, chicken).	Farmers cultivate plantain, cassava, cocoyam and maize for home consumption and for selling in the market. -Some might have livestock in their place of origin.	Farmers cultivate plantain, cassava, cocoyam and maize for home consumption and for selling in the market. -Some might have livestock in their place of origin.
Farm size	Varies between 6-30 acres. Old farmers that have not bequeathed much land to children or that have bought land tend to have largest farms.	Varies between 4-30 acres. Farms are generally smaller (4-15 acres) if inherited through the family.'	Varies between 4-30 acres.	Varies between 1-10 acres.	0 acres (have only access to land but no ownership) Some might possess land in their homelands.	0 acres (have only access to land but no ownership) Some might possess land in their homelands.

Table 4.2. Farm typology of cocoa farmers in the Nyinahini project

	Landowner old traditional farmer	***Landowner active farmer***	***Landowner business farmer***	***Abunu farmer***	***Caretaker***	***Dɔ didi***
Labour	They have caretakers overseeingthe farms or *Dɔ didi* individuals for weeding their farms.	Big farms: 3-8 labourers. Small farms: 1-3 labourers. Mostly seasonal labour. *nnoboa*[15].	Big farms: 3-8 labourers. Small farms: 1-3 labourers. Mostly seasonal labour. *nnoboa.*	Mostly family labour. Some farmers hire 1-4 labourers for seasonal activities. *nnoboa.*	Family labour Breaking pods through *nnoboa.*	Family labour Breaking pods through *nnoboa.*
Decision making	Farmers take the final decision, but if they have caretakers, they might leave most of the management decisions to them.	Farmers take all the decisions pertaining to land management.	Farmers take all the decisions pertaining to land management.	Some farmers work under *Abunu* system in family land, in this case, the farmer can participate in land management decisions (organic or conventional). However, if they are not relatives, the decision making is mostly based on landowner's opinion.	Decisions are made by landowners. However, they might influence their decision if their ties with the landowner are strong.	Decisions are made by landowners. When they are not managing the farm satisfactorily, they can be replaced.

[15] *Nnoboa* is a sort of association where farmers help each with the harvesting and breaking pods (Boahene, K., *et al*, 1999). It benefits those who do not have enough capital to pay labourers assisting with harvesting.

4.4 Influence of the diversity of farmers on intensification

In cocoa farming there are different patterns of intensification, which are partially due to the structural differences among farmers. The 'landlords' and 'landless' categories not necessarily translate directly to a rich and poor classification as Takane (2000) demonstrated. Sharecroppers can often be wealthy farmers (Amanor, 2006). It is difficult to differentiate clearly the social layers when looking at the types of farmers.

This is partly a result of many different interconnections between farming systems. Some farmers with a willingness to acquire more land have become involved in sharecropping arrangements even though they have different farms as their own property. For example, there may be landowners who are also caretakers in other farms, or *Abunus* that have already got land as their own property, but who are working as *Abunu* in other farms. There are *Abunus* or caretakers who have established cocoa plantation in their property, and do not posses enough land for food crops, thus, they have to ask for some plots to work as *Dɔ didi.*

Although this involvement in different arrangements is occurring, some general trends can be observed in terms of management if we look at individual farm groups/ farm operations. The old traditional landowner has no pressing need for intensification, because they live on a day to day basis, and cocoa represents their 'social security' (as it has been described by many authors). Thus, even with relatively low productivity of the farm they are ensured of source of income from this activity. Thus, there is not much incentive to invest in inputs or intensify their production. Perhaps they could be the type of farmer that Ayenor (2006a) argues are declared as 'organic by default'. A farmer of this type produces 1 or 1.5 bags of cocoa beans/acre.

The active landowner type may employ more diverse management strategies and there are different prevailing approaches towards production. The first type of management is when the farmer has an old plantation, which has been abandoned or is not being well-managed. However, once they receive support to purchase inputs, they start to invest in their cocoa plantations. The introduction of new practices such as pruning, thinning, removing chupons and controlling pests helps them to achieve between 2 to 4 bags of cocoa beans/acre.

There are also farmers who start a plantation by considering in what manner they may get the most out of perspective labor and capital investments from a future cocoa crop. These farmers use hybrid cocoa and are constantly monitoring their crops to control pests and diseases. They also invest in soil fertility by the application of fertilizer. Until now, the landowners are the ones that tend to follow this strategy. They can produce around 5 bags of cocoa beans/acre.

Some *Abunu* are willing to start investing more energy in their farms but others may be not willing to do so. The fact that the more land they clear the more land they obtain is to a certain extent influencing their

preference for intensification which in turn may affect crop performance. According to a landowner, an *Abunu* farmer may be willing to invest in the land. However, when the *Abunu* has a 'black mind' as he mentioned, the person is not investing until the land is exhausted. In such case, the *Abunu* farmer does not mind to reduce his income during the first years of establishment. They believe it is better to have more land in tenure than a higher income during the period of *Abunu.* Additionally, some *Abunus* prefer not to show the landowner, that the cocoa farm is producing good yields because the landowner would then select the best part of the farm.

The Business farmer usually aims towards having highly productive plantations, but the concurrent production costs are also very high, especially in terms of labour. All inputs and operations required to acquire high yields are being employed, including pruning, thinking, using hybrid seeds, application of fertilizer and control of pests and diseases. In addition, unproductive plants are being replaced. This type of farmer can acquire at least 10 bags/acre

These patterns of intensification are related to the importance of other income sources, because they might demand additionally labour. As it was mentioned before, for *Abunu,* food crops are very important, not only for home-consumption, but also because they are an important income source. In some cases they represent a more interesting activity in terms of cash flow, because they can receive income during the whole year. Important crops for them are the plantain, yam, cocoyam, cassava, and maize. For some of the farmers, rearing of goats and sheep is also relevant. For landowners, diversification with oil palm, plantain, okra, pepper, tomatoes, etc. as well as off-farm activities such as provision stores, trading, food vending, represent additional income sources.

4.5 Discussion and concluding remarks

Social differentiation appears to shape cocoa farming in Ghana thereby creating different farming systems. The relationship between farmers and access to and control over land and labour and the corresponding land tenure systems helped to develop a structured classification of the communities of Nyinahini, which may be used to capture inherent diversity and explore and design development trajectories for different farm groups. Considering the fact that local farmers are facing unequal access to land while insecure land tenure is having a profound effect on livelihoods of smallholders (Economic Commission for Africa ECA, 2009), the proposed classification based on sharecropping arrangements and the corresponding social relations appears to provide a sound base for understanding the agrarian structure related to cocoa farming.

The empirical results show that land tenure systems in Nyinahini remain complex. Every community has their own pattern of migration and different ethnic constitution and social arrangements which reflect in distinct realities and unequal positions. Some of the migrants are landless and moved to the region as the *Dɔ didi* in order to survive living of the land people borrow them for farming. Without land they must

find a way for sustaining themselves. Kwapong (2009) mentions that individuals who may not own any land or who do not have adequate financial resources may also not be able to acquire land, because they cannot afford to do so. This was in fact observed in some communities, because even for sharecropping systems such as *Abunu*, farmers must have some money in order to be able to get a contract from the landowner.

The structural differences between farmers influence to a certain extent the intensity of farming and productivity. The current study shows that diversification by farmers occurs at different levels. *Abunu*s (in first stages) and Caretaker/*Dɔ didi*, diversify their production as a common way of cultivation, and as a strategy to receive income while cocoa is being established. Growing food crops as an intercrop with cocoa, provides food security and additional income before the plantation comes into production, which is very important for their survival (Knudsen and Fold, 2011). Women are very much leading this transformation as they are involved in plantain trading and these crops represent an important income for women. For landowners, diversification is part of broadening their income basis and there is strong tendency towards cultivation of palm oil and high value vegetables (e.g. tomatoes, okra, etc).

Furthermore, the complexity of every farming system and the importance of other activities in the livelihood help us to understand what is important for local farmers and how they value different aspects of local farm management systems. For instance, food crops have a very important value for *Abunu* caretakers and especially for *Dɔ didi,* since they eat and live from what they grow. For landowners who are exploring different crops, engaging in different activities, pluriactivity implies opening new windows of opportunity and additional income sources. As Giourga and Loumou (2006) argue, pluriactivity enables farmers to increase their living standards. On the other hand, even though other crops could provide higher income than cocoa, farmers have their reasons to engage in cocoa cultivation. Research by Baah and Garforth (2008) showed the meanings that farmers attribute to cocoa, as farmers think that keeping the vocation of their ancestors is paramount. Furthermore cocoa means social security for their old age (Onumah 2010).

The communities included in this study appear to be aware of the land scarcity. Farmers may work under sharecropping arrangements although they already have land as their own property. This is because they need to acquire as much land as possible to ensure enough land to support their family. This is especially true for those who have no rights to inherit land with the matrilineal system and even for those who were before obtaining land from their close kin, but can no longer ensure to get access to land due to land scarcity (Amanor, 2006). Furthermore, the cocoa plantation brings security of land ownership and sharecropped land is more secure and implies less conflict than the family property in which land can be an element of conflict between family members (Amanor, 1991).

The study of the social relations of production elucidates how processes of land accruement took place. Laven (2010) demonstrated that this farmer's position correlates with ownership of the farm. Thus, the

idea that more powerful farmers (landowners) have better assets and are structurally more empowered is confirmed. The social structure is to a certain extent both determining and reflecting the differentiation within the farmers' community. Moreover, as we will see in the next chapter, these structural differences between farmers may have a pronounced influence on the adoption of certification schemes. In the next chapter, I will demonstrate that structures are also influenced by the enthusiasm and emotion that farmers have at a certain point in time.

5 CERTIFIYING SUSTAINABLE COCOA

This chapter describes the certification schemes that are being promoted for cocoa production in Nyinahini. The promotion of sustainable cocoa may include various certification schemes, but in Nyinahini, only Organic and Rainforest Alliance certification approaches are being implemented. Within the context of this study, I will examine the underlying mechanisms that lead farmers to implement agronomic practices that are in accordance with organic/RA guidelines. However, these key ideas behind the standards are relatively new for the farmers' community and their implementation in cocoa farming poses a challenging technological innovation. This challenge will certainly be shaped by individuals, their inner motivations, and their interaction with other community members.

5.1 Features of organic and Rainforest Alliance cocoa

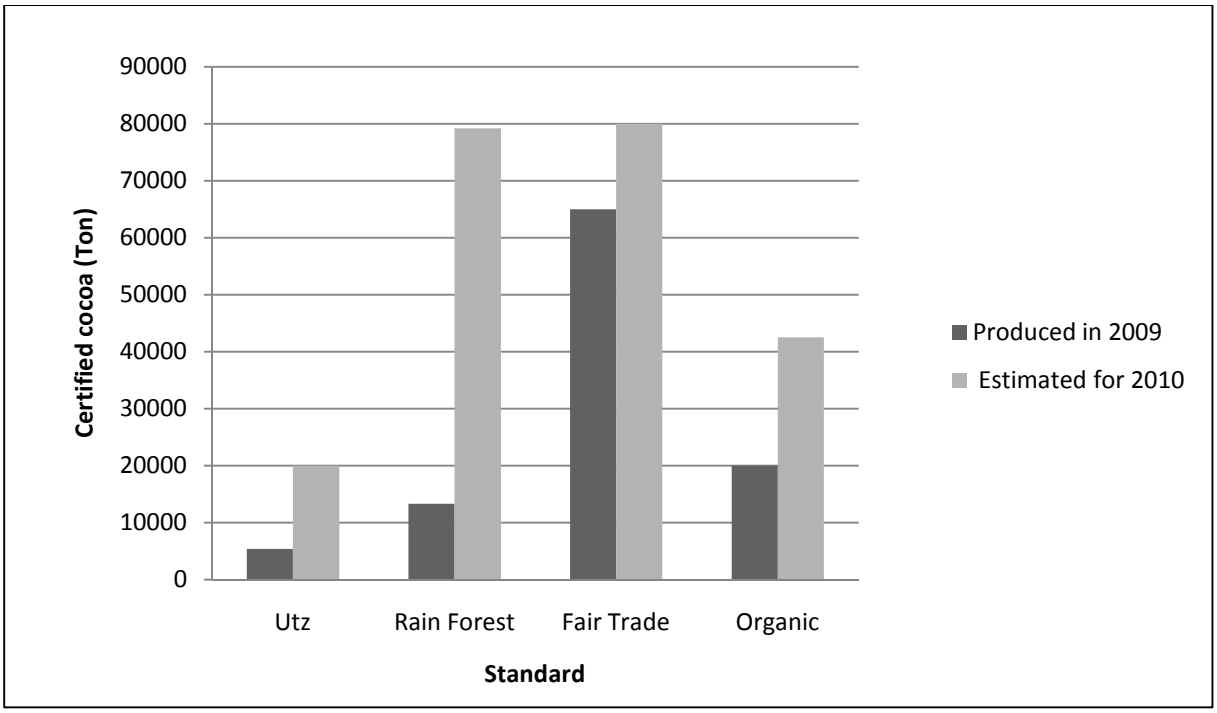

Fig. 5.1: Production and projections of certified cocoa worldwide (modified from TCC, 2010)

If we look at global certified cocoa production, the main standards that have been promoted are Organic, Rainforest Alliance (RA), UTZ Certified, and Fair Trade. According to the report of the Tropical Commodity Coalition TCC (2010), the production and projections of the standard bodies show that RA produced a total of 13 300 tons of certified production in 2009 and Organic a total of 20 000 tons (Fig 5.1.). Fair trade had the largest market share of certified production in 2009 with 65 000 tons. However, according to the TCC report, this data is subject to variations due to the double counting caused by multi-

certification. But these estimates provide some indication of global trends for certified cocoa production according to the estimation of the certification bodies.

Organic

For organic, there are three major standards[16], depending on outlet market. Certification standards may include some of the following requirements:

i. Conversion period: The conversion period is the time span between the initial implementation of organic management and the operation gaining the official status of being certified organic (IFOAM, 2010). The duration varies depending on the type of crop and the different organic standards[17].

ii. Soil fertility: Inherent soil fertility should be improved while erosion should be avoided by appropriate use of crop rotation and cover crops in annual cropping systems. For perennial crops wherever possible, cover crops should be included. Manure can be used, but there are regulations concerning the source where it comes from and the way it is composted.[18]

iii. Crop protection: It is based on preventive practices, using resistant varieties, promoting natural enemies and sound crop rotation schemes[19].

iv. Seedlings: Must be organic, or if these are not available, producers should have adequate evidence of non-availability in order to be allowed to use non-organic seeds (as long as they are not treated with any chemical). The use of non organic seeds is subject to authorization of the certifying bodies.

v. Buffer zones: Are required by the certification bodies in order to avoid cross contamination from neighbouring farms.

vi. Records: Are required and the level of detail depends on the organic standard[20]. An organic management plan should be up to date, as well as records from the activities, invoices, harvesting records, etc.

These are general requirements of the organic standards when certifying an operation or production unit. Nevertheless, there are additional requirements if a group of individuals wants to be certified. These

[16] NOP-USDA, (EC) 889/08 and Japan Agriculture Standard (JAS)

[17] In the case of perennial, NOP requires three years until harvesting. Nevertheless, the certifying body can reduce the conversion period if there is enough evidence that non-allowed chemicals have not been applied to the land during previous years. Land history is important for certifying bodies to check the conversion period.

[18] (EC) 889/08 and JAS, do not allow manure from factory farming. NOP-USDA is very restricted to the composting process.

[19] If pests cannot be controlled by preventive practices it is possible to use allowed natural or mineral substances or substances from the list of allowed synthetic substances in the case of NOP-USDA. For EC 889/08, only substances of the Annex II can be used in organic, similar for JAS, where only Annex 2 is possible to use in organic.

[20] Probably NOP is the strictest standard, although JAS and EC 889/08 require certain records to be kept.

requirements might vary depending on the context and certifying body. There are guidelines that help certification bodies to inspect such groups[21]. It is important for the groups to have an Internal Control System (ICS) to guarantee that the organic standards are being successfully implemented. The ICS should perform internal inspections, evaluate, monitor and act upon whatever risk of loss of organic integrity in any part of chain, from the production until the labeling and marketing.

Although standards are rather similar, there are small differences among them and there is need for harmonization of these standards due to facilitate the processes of certification and global marketing (NOP 2010). Furthermore, there have been efforts to include a social dimension in organic standards which include private initiatives of producers and subsequent guidelines for its implementation by IFOAM (Rural industries research and development corporation RIRDC 2001).

Rainforest Alliance (RA)

Unlike Organic, RA has well-defined criteria related to social aspects in addition to those for the environment. This standard consists of ten principles. As every region has their particularities, the Sustainable Agriculture Network (SAN[22]) which is a coalition that set up the RA standard, has developed an interpretation guidelines for sustainable cocoa production in Ghana[23] to facilitate the interpretation of different criteria under local conditions. An example of this is criterion 5.4, '*the farm must have payment policies and procedures that guarantee the complete payment of workers on the dates agreed upon in the labour contract*'. Moreover, standards also differentiate terms and conditions for sharecropping systems such as *Abunu* and *Abusa* where they stipulate farm payment policies according to each arrangement. For example the payment for *Abunu* system is ½ of harvest or its cash value and $^2/_3$ of harvest for *Abusa* system.

Sustainability of cocoa production is a goal for most of the current standards. However, sustainability is a broad wide term that has different connotations and attracts criticism from different angles. Whilst some standards include several dimensions for sustainability (social, ecological, economic) others omit key dimensions when implementing such standards. There is an interesting comparison between standards done by the Tropical Commodity Coalition (TCC) in the cocoa barometer (TCC 2010). It was stated that one can compare standards to assess their strengths and weaknesses.

[21] IFOAM has published a guidance manual for producer organizations in developing countries applying for smallholder group certification in 2004.

[22] The SAN, the oldest and largest coalition of NGOs striving to improve commodity production in the tropics, develops criteria for responsible farm management. The standards developed by the SAN Secretariat comply with the Code of Good Practice for Setting Social and Environmental Standards of the International Social and Environmental Accreditation and Labeling (ISEAL) Alliance (www.rainforest-alliance.org)

[23] Interpretation Guidelines-Indicators for Sustainable Cocoa Production in Ghana (March 2009)

According to TCC, RA is flexible, tolerant towards low entry level producer groups, but traceability is considered to be weak. In terms of thematic aspects, RA scores well on environmental quality, trading conditions, social quality, but poor for product quality because consistent quality standards were lacking.

Regarding Organic they compare only the EU-based regulation, mentioning that its strong points are internal and external auditing and traceability while its weakness are low tolerances and flexibility which hampered continuous improvement. On the thematic dimension, Organic scores well for environment while it does not effectively address health and food safety issues and also lacks social aspects. A comparison of these two standards is provided in Table 5.1 which serves to provide a better understanding of the requirements of these standards and their implementation in Ghana.

Table 5.1. Key principles of Rainforest Alliance and Organic standards

Standard	Key principles	Comparison	In Ghana
Rainforest Alliance (RA)	The ten principles of the RA standard are: 1) Management system 2) Ecosystem conservation 3) Wildlife protection 4) Water conservation 5) Working conditions 6) Occupational health 7) Community relations 8) Integrated crop management 9) Soil conservation 10) Integrated waste management.	*Strengths* -Tolerant towards low entry level producer groups. -Flexible *Weakness* -Traceability -Quality requirements are not standardized	CAA (are also certified UTZ) Ntobroso Nyinahini (in conversion)
Organic	The key principles of organic agriculture are: 1) The principle of health 2) The principle of ecology 3) The principle of fairness 4) The principle of care	*Strengths* Environment *Weakness* -Coverage of health, food safety aspects -Social aspects	Ntobroso Nyinahini (in conversion)

5.2 Context of the Nyinahini project

The Nyinahini project currently includes eight communities and a total of twenty communities will be included by the end of the five-year project. The region is one of the most productive in the entire country. The high fertility of the local soils combined with optimal rainfall pattern renders this region one of the most productive cocoa production areas.

Project partners from the government include the Ghana Cocoa Board (COCOBOD), the Cocoa Marketing Company Ltd. (CMC), the Quality Control Division (QCD), the Cocoa Research Institute Ghana (CRIG), the Atwima Mponua District Assembly and the Ministry of Food and Agriculture (MOFA) with its project Cocoa Diseases and Pest Control (CODAPEC) which provides the mass spray

program with cupper fungicides. Moreover there is also an NGO called Child Research for Action and Development Agency (CRADA) that is working in the area to eliminate child labour.

Other partners buying and marketing cocoa present in the area are the Licensed Buying Companies (LBC) Yayra Glover Limited and Produce Buying Co Ltd (PBC). For the inspection services, Control Union is the agency selected by AE/LBI (Agro Eco Louis Bolk, 2009).

The AE-LBI project was initiated in 2009 and is aiming to certify cocoa producers under 'Organic' and RA and at the time of this study it had only been implemented for six months. During its initial phase, the organization has showcased the project concept and outlined major aspects of the Organic and RA certification schemes to local stakeholders. They also discuss the key production principles and corresponding agricultural practices required to comply with certification standards. As a new project in the area, people seem to be motivated with the intervention.

Furthermore, AE/LBI is willing to promote the formation of a farmer based organization in which farmers create a local network that will sustain project intervention activities after the ending of the certified cocoa project. Although currently farmers are not part of any formal association, there are informal organizations based on existing social networks and producer associations. One of the local organizations is the plantain association, which is mainly constituted by women and facilitates the marketing of plantain in the closest market (Bibiani). Another association includes oil palm farmers and the main objective is to support each other during oil extraction process (in artisanal way). There are also community-based efforts like *nnoboa* or cooperative labour in which farmers help each other on their farms without any payment involved (Boahene *et al.*, 1999).

5.3 The conversion processes in Nyinahini

Specific statistics about Organic and Rainforest certified cocoa in Ghana are not available, but the major producer of Fair Trade cocoa is the Farmer association Kuapa Kokoo Ltda. Examples for Organic include the farmer group Cocoa Organic Farmers Association (COFA) that produces and export organic cocoa since 2007, the Ntobroso group includes 1000 farmers who are organic and RA, Cocoa Abrabopa Association (CAA) which has about 1500 farmers (RA and UTZ certified), and Nyinahini project that expects to include 1500 farmers.

The Nyinahini project has already contracted 500 famers who are in the conversion period[24], but these will only be certified once they finish this three year transition period. It is expected that farmers are certified organic and RA. However, other certification programmes such as UTZ and/or Fair Trade could be included afterwards (Agro Eco Louis Bolk, 2009).

[24] The conversion period is the time between the beginning of organic management and the certification of crops and animal husbandry as organic.

At the time of this study, the total land area in transition for the eight communities is 2 718 acres. Regarding the production volume of cocoa, if the farmers meet RA approval, farmers will be able to sell the production as RA certified while they are in the process of conversion towards organic. Currently the volume of cocoa in this process is 418 Tons (Nyinahini farmers' list, 2010, see Fig. 5.2). In addition to a premium price, expected added benefits may include an increase of productivity of 30% in three years and 50% within five years (Agro Eco Louis Bolk, 2009).

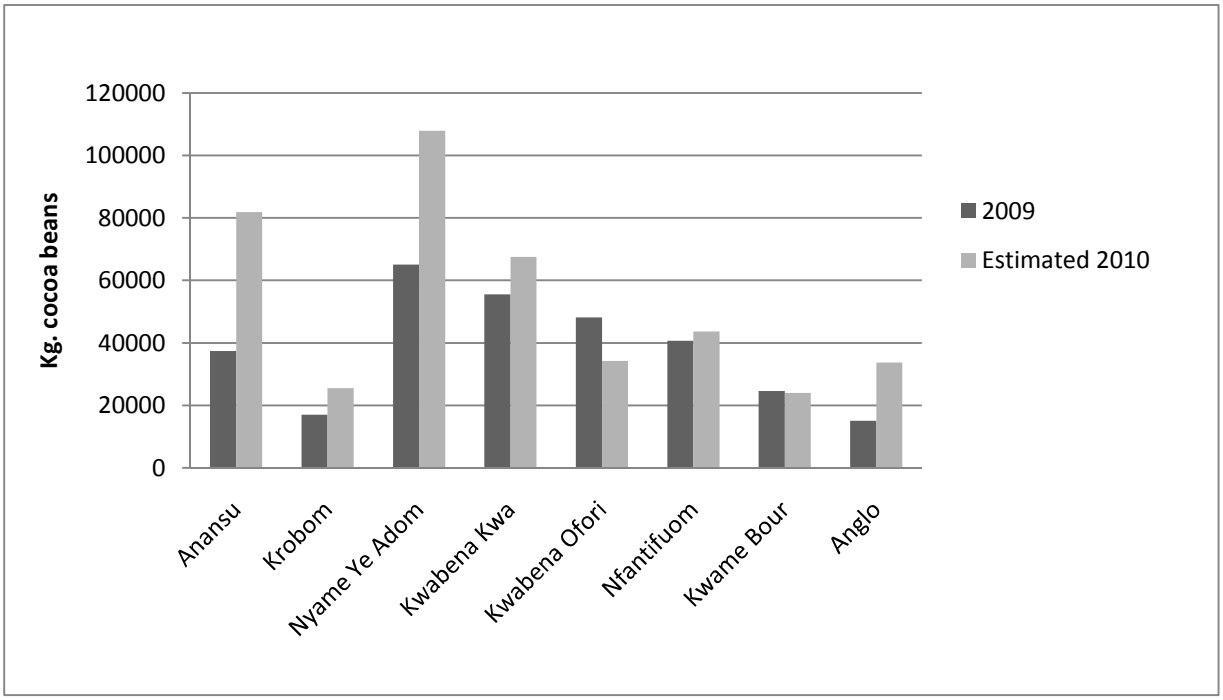

Fig. 5.2: Cocoa production in Nyinahini (Source: Nyinahini farmers' list, 2010)

In the case of Nyinahini, AE/LBI set up the Internal Control System (ICS), including the registration system, trainings, documentation and lobbying for farmers to receive premium prices from the corresponding LBC. The cost of the certification is included in the budget for the project which implies that farmers are (initially) not carrying this cost. The current structure of the ICS is constituted by the Field officers and Field supervisor (Picture 5-1).

The selection of the field officers was done considering important factors such as level of education, communication skills and recognition within the community. The Field officer serves as a documentation officer; it means that he has to manage the files generated by the ICS, compile data and reports to present to the external inspector. Moreover, he is also an office keeper and conduct activities to ensure the success of the organic programme. The field officers are in charge of recruitment and registration of famers that are interested in enrolling in the certified schemes, maintain records of the farmers, perform internal inspections and visit the buying centers during harvesting.

Picture. 5-1 Field supervisor in the left (Twi interpreter) and Field officers

One of the main roles of the Field supervisor is providing training via Field Farmer School (FFS) together with the Field officers. Moreover, the field officers are also responsible for the training of the farmers in the respective communities. The focus of the training programmes is to develop sound agricultural practices; including thinning and pruning of lower branches to promote canopy formation and improved light infiltration and air circulation. In general these agricultural practices aim to reduce the incidence of pest and diseases and to increase yields. The training programmes also include experimental plots to show the effect of these practices on pest and disease control, and to demonstrate comparative use of chicken manure vs. chemical fertilizers for fertilizing the soil.

Farmers in Nyinahini are being trained on shade management because many plantations have been established a long time ago and plant density may not be optimal[25]. To increase biodiversity and to comply with RA, farmers have been taught about the importance of shade trees. Some recommended species include: Emire (*Terminalia ivoriensis)*, Ofram (*T.superba),* Otie (*Pycnanthus angolensis),* Esia (*Petersianthus macrocarpus)*[26]*,* and six to nine shade trees are planted per acre.

[25] Traditionally, farmers establish the plantation by removing the forest and thinning the forest canopy to have some trees giving shade to the cocoa young trees. This together with the implication of shifting cultivation to expansion to new frontiers have left some farms with not so many standing trees (Amanor, 1994)

[26] Twi names of trees recommended for cocoa plantations.

In some cases cocoa plantations have become out-shaded by cocoa trees, which favor the incidence of pests and diseases. Some of the major pests and diseases of cocoa in the study area are black pod (*Phytophtora spp.*), capsids or mirids (*Distantiella theobroma, Sahlbergella singularis sp., Helopeltis sp.*) and mistletoes (*Tapinanthus spp.*). Farmers consider capsids to be an important problem. This is consistent with studies in other organically managed cocoa crops where capsids appeared to be a major problem (Ayenor,*et al.,* 2004). AE/LBI provides training workshops for improved canopy management to address this issue. With cultural practices like pruning and thinning, farmers have been taught to use preventive measures. Some of the farmers receive the support from the mass spraying program[27] with Funguran-OH, which is a copper fungicide (Copper Hydroxide) to control black pod and also use neem extract (*Azadirachta indica*) (provided by AE/LBI) to control capsids.

Soil fertility is critical for complying with the standards; therefore, AE/LBI is also providing farmers with chicken manure and also demonstrates its beneficial effects on cocoa production via on-farm pilot studies. Currently farmers are getting three bags per person, but these quantities are much less than the recommendation of the field supervisor (eight bags/acre). With all this support from AE/LBI, it is expected that the farmers implement sound agricultural practices and remain in compliance with certification standards and thus may be awarded with the Rainforest Alliance Certified seal while at the end of the transition period the cocoa may also be marketed as certified Organic. It is expected that farmers are motivated to meet certification requirements.

5.4 Driving forces and constraints for pursuing Organic and RA certification

Motivations

In this section overall farmers' motivation when joining the project will be compared with results for the pair wise ranking exercise (section 3.2) where farmers were exposed to different reasons besides income.

Based on the initial assessment, 'increase of income' appeared to be the single most important motivations to join the project, when considering all the communities for both, men and women, (62% and 68% respectively). Reduction of costs was listed second for men (20%) because of the free manure. For women, training (17%) was more important, because they believe that if farmers are being trained, they would manage the crop better resulting in an increase of income.

However, in the pair wise ranking the motivations differed from this initial assessment (see Table 5.2.). Together with the individual interviews, it was possible to explore the motivations of the farmers to participate in the Nyinahini project according to each community. Although the pair wise ranking exercise could not be implemented in all the communities, the opinions concerning the motivation to participate

[27] AE/LBI has communicated to the Mass Spray Programme executives that the communities inside the Nyinahini project must not receive any non allowed chemical in order to avoid any risk of contamination of the farms in conversion to Organic.

in certified cocoa could always be obtained from the narrative of interviewed farmers. In the next section the effects of communities, gender and differences between farmers on motivation will be presented.

Table 5.2. Ranking of key motivations for joining the organic/Rainforest certified cocoa project

	Nyame Adom	Nfantifoam	Kwabena Ofori	Krobom	Anansu
Ranking Men					
Increase income	n.d.	1	4	3	n.d.
Reduce costs		4	3	4	
Training received		2	1	2	
Better for cocoa production		3	2	1	
Ranking Women					
Increase income	n.d.	n.d.	2	3	1
Reduce costs			3	4	2
Training received			4	1	3
Better for cocoa production			1	2	4

Data from the focus groups (Ntotal= 102, women n=41, men n=61)

In Nfantifoam and Nyame Adom where there are more migrants, women argued that expected yield increase with organic is an incentive for them to pursue organic production schemes. They believe that manure is helping cocoa trees to yield more either because they have heard from other farmers or because they have experienced it themselves. One female caretaker stated "*I have seen how manure is helping cocoa plants to get more pods, especially the immature cocoa, which is very marvelous with organic*". One *Abunu* woman also mentioned: *When we were applying fertilizer, it was not helping to increase yields, but with the organic manure, the yields are better, it really helps to yield more.*

For these female farmers who believe that organic will increase yield, certified cocoa production represents possibilities of obtaining a higher income. This income increase is reinforced by external actors when they mention premium prices for certified cocoa. This was shown in the focus groups where women mentioned that they also became motivated after CRADA stated that certified cocoa farmers will receive premium prices. Men within these communities, on the other hand, expressed that income is the most important motivation. In Nfantifoam, men ranked 'increase income' first and 'training received' second. In these communities men are enthusiastic about the increase of income. One of the *Abunu* male farmers interviewed from Nyame Adom argues '*in conventional there is no money, but in organic I receive help'.*

In Krobom, where the majority of the population is from the Eastern region, the main motivations for women and men are the perception that 'organic is better for cocoa' and the 'training they have received' (rank as first reasons in the focus groups). Men mentioned that in the long-term Organic is better for cocoa plantations. They mentioned '*these practices were also used in the past. People used to leave some trees that were giving a lot of leaves to enrich the soil'.* Women mentioned '*fertilizers in the long run destroy the farm, if you apply and apply fertilizer bit by bit the plants will die'.* Thus, women and men in Krobom consider Organic and RA

practices to be better for the cocoa plantation and for the sustainability of the cocoa farms, although premium price were also mentioned as being important. Women mentioned that '*people are not willing to buy cocoa produced with agrochemicals because of the residues'*. They want to produce cocoa without residues because they have sympathy for the health of the final consumer '*we have sympathy for the health of all of you*'.

In Kwabena Ofori, where the population is composed by migrants from (Eastern and Upper East) the training received was ranked as first motivation. One *Abunu* farmer mentioned that the trainings on pruning and thinning have really helped him to improve his system, and to reduce the incidence of pests and diseases. This directly reduces input costs and use of agrochemicals for pest control. Actually men ranked as second motivation 'the reduction of costs' because AE/LBI is providing inputs for farming. In contrast, women ranked this motivation as the least important.

Women ranked 'organic and RA being better for cocoa production' as first motivation. Female caretakers mentioned '*we have seen plants yielding more with application of manure'*. They believe that through organic production yields can be increased. Moreover, being part of the group of certified farmers would also imply access to inputs. In the focus groups they emphasized that they wanted to join because AE/LBI provides manure at no costs which will reduce fertilizer costs while, women also mentioned that premium prices would increase their income. In fact, income was the second most important motivation for women in this community. This was also mentioned in the individual interviews; one of the caretaker women mentioned '*with organic I think I would get more yields. I also have heard that Agro Eco will provide inputs for farming'*.

In Anansu, where most of the inhabitants are landowners and natives (Akans) the main motivation was income, followed by the supply of free inputs. Women ranked the reason 'organic is better for the cocoa' in the last position. Women appeared to be driven by acquiring a higher income. In this community, they seem to perceive that joining the group will help them in the future because the organization could provide farmers some loans. The narratives in the individual interviews showed that they greatly analyze the benefits of joining the organization as they called AE/LBI. Thus, they are motivated by the possibility of obtaining higher prices for the certified cocoa, the fact that the organization is providing inputs and the possibility that the organization might provide loans. These benefits were not important for women in other communities.

Men expressed in the interviews their motivations to pursue Organic/RA. They perceive the new practices implemented help to enhance the sustainability of their farms. One landowner farmer mentioned '*I received the speech about sustainability and how this also would help the cocoa farms*'. It was interesting to see that many people are in the process of 'experimentation' in one plot or one farm but not in all the farms constituting their assets. Mainly landowners argued '*This is a new system, and I want to try to see if this works or not'*. Thus, it is in fact what some farmers are doing, when they register one farm in the project but they still have farms that they do not include in the project.

Constraints

In the focus groups in communities with higher proportions of migrants for instance Nyame Adom, women expressed difficulties with weeding being the main constraint when pursuing organic certification. Women in Nfantifoam anticipated the same problem, because if they cannot apply herbicides they would face problems, especially if they had to weed several acres. Furthermore, women thought that certification would be prohibiting children from helping in the farm and that this would be an important constraint. Women expressed this as important constraint and one farmer argued '*now children cannot help in different tasks they used to help with'*. Furthermore, they perceive that this is stopping parents teaching children about cocoa farming and hampers children to replace parents when they grow old[28].

However, this it should be noted that this is a clear misconception since it stipulates working conditions rather than prohibiting use of minors for family labour. Moreover, it is only a requirement for RA and not for Organic certification. According to RA, farmers should not employ workers under the age of 15 full or part-time. Children can participate in cocoa farming to a certain extent. There are recommendations for children's participation in cocoa farming that mentions for example that children should not be sent to farm in school hours, adults must ensure adequate intake of drinking water hourly, and no activity must be assigned that could put their health at risk, such as application of agrochemicals or activities that require strong physical exertion (Sustainable Agriculture Network, 2009). Therefore, it seems to be relevant to clarify this issue.

In contrast, men in this community mentioned issues related with inputs and pest and disease control which in fact, are activities carried out mainly by men. They explained that one of the main constraints is that they do not know if neem extract will control capsids. One interviewer from Nyame Adom said '*If Agro Eco does not provide neem I will have to apply Confidor to control capsids'*. This does not imply that all farmers think in the same way, but there is still this connection between the willingness to follow a certain trend or not and the need to solve the problems caused by capsids.

In Krobom, both women and men mentioned weeding as serious constraint, and men mentioned difficulties with the initial clearing of land and pruning. In the community of Kwabena Ofori this constraint was also mentioned by men. They argued '*pruning is a new technology and is very time demanding'*. On the other hand, women in Kwabena Ofori perceive that weeding is the main constraint because they cannot use herbicides with organic. This shows that men and women agreed on weeding being the main constraint while men also included pruning because of the higher labour it requires.

Either because there were not enough sprayers or because the neem arrived late, farmers face problems when they cannot spray their farms in a timely fashion and in Anansu this was stated to be a major constraints that was anticipated to negatively impact yields. Farmers mentioned that '*Without spraying, the*

[28] This is a general notion of farmers. They think sending the child to the cocoa farm helps in the training of the child in cocoa farm techniques (MMYE, 2008).

pods have been destroyed by pests'. In Anansu, farmers are worried about the incidence of pests because the delay of the neem sprays and the frequency in which it is applied. Farmers believe they should spray at least 3 times per year, and with the neem some of them could only spray once, while others are still waiting for their turn to spray. Some farmers mentioned that they spray themselves instead of waiting for the contractor to come and spray, but this information could not be confirmed. As the incidence of damage increase when spraying is delayed, farmers thus may opt to spray the crop themselves.

Another constraint mentioned in this community was that they are concerns about the loans that they already have with the previous Purchase Clerks (PC)[29]. They thought that if they join the Organic/RA farmers' group, they should sell the production to a specific Licensed Buying Company (LBC)[30], and expressed concern about the outstanding loans with the other LBCs that used to buy their cocoa. In this community, financial concerns, untimely deliverable of input, and access to loans made it distinct from the other communities.

In sum, there are several issues influencing the motivation and constraints of farmers that are participating in the Nyinahini project. The constraints are related to the gender role in agriculture and to the type of means farmers have to cope with particular constraints. This will be further analyzed with the case studies. In the next section the influence of social differentiation will be depicted, as it is important to consider when studying the adoption of certification schemes.

5.5 Influence of social differentiation on farming decisions

As individuals are embedded in a complex arrangement of land tenure systems, I want to explore how this influences the motivation or constraints of individuals when following certain trajectories. This part will be elaborated further in a next section but first some of the issues encountered when interviewing farmers about their motivations or constraints to pursue Organic/RA certification will be described. I considered narratives of landowners who had caretakers, *Abunus* and caretakers to explore who take the decision whether to join a certification scheme. Decision making was influenced by relations of power, but also by the trust that existed between landowners and caretakers or landowners and *Abunu* farmers.

In some instances, individuals do not seem to have the freedom to decide about the management of the land. For instance one female caretaker that has been caretaker for 2 years argued '*the decision to join the organization was taken by the landowner. When the field officer came to explain about the programme and the trainings the landowner got interested. He goes to the trainings and then he tells us what to do*'. When I asked this caretaker if she

[29] The PC is the Purchase clerk who is in charge of buying the cocoa from the farmers to the respective LBC. When the Produce Buying Company lost market share with the general liberalization of cocoa marketing, new Licensed Buyer Companies (LBC) could purchase cocoa.

[30] The certified entity shall be the group as a whole. This means that individual group members may not use the certification independently (by marketing as individual producers outside of the group) (see the criteria in 8.3.3. a.) (IFOAM, 2010).

liked the new way of farming she said '*I like fertilizers more because you have more pods quickly, but I know in the long term it does not work, it does not help the cocoa trees'*. Another female caretaker belonging to the Brongs ethnic group and who has also been caretaker for 2 years mentioned '*The landowner instructs on what to use. Formerly we were applying Ridomil, but now the landowner wants to be organic. Besides..if you ask me I like fertilizers because they can increase yields very fast. I have not seen efficacy of poultry manure'*. This caretaker had not experienced the effect of manure, but most of the caretakers that have experienced or have heard from others the effects on higher yields, are motivated to pursue organic practices. For instance, one female caretaker from the Northern region and who has been a caretaker for 5 years mentioned '*When we heard about the benefits we got interested, we asked the landowner, and he agreed… it depends on how you convince the landowner'*.

Although there might be many factors influencing hierarchical relations, it may be that the ties and trust between landowner and caretaker or *Abunu* become stronger over time. An example of how individuals can convince the landowners is this farmer that has been under *Abunu* for 9 years. He mentioned '*when I started Abunu I could not take any decision, but with the years I have built trust, because I have more experience with cocoa, so I consult the landowner, but in general I can decide by myself what to do with the farm'*. This is of course, in terms of management as other decisions are completely up to the landowner until the land is completely divided and the contract with the *Abunu* is finished.

In the case of the *Abunu*, it was observed that some of them are relatives of the original landowner; therefore the trust or relationship is different to the one a migrant caretaker and the landowner may have. Some *Abunus* stated that they can make decisions, but they must first consult with the landowners; for example those individuals who work in family land. This *Abunu*, who has been under *Abunu* contract for almost 7 years in a farm of his grandmother mentioned '*I cannot take decisions so much like when organic people cut cocoa trees*[31]*, I cannot decide to cut off the cocoa trees. I do believe in organic, I think with organic I could get the same or even more bags, but I cannot join the project until the division is done. I could start convincing my grandmother…'* In this case, although the farmer would like to join certified cocoa production, he first has to convince his grandmother before experimenting with new practices.

5.6 Discussion and concluding remarks

This study shows that communities with higher proportions of migrant farmers are very much influenced by direct evidence and farmer to farmer interactions by which they become more easily convinced that organic practices may result in higher yields and/or income. This might be related to the kind of farmers found here, as most of them are migrants involved in sharecropping arrangements such as caretakers/*Abusa* or under *Abunu* system. Thus, farmers face inherent limitations as they typically do not

[31] The farmer is referring to pruning and thinning; practices that have been promoted especially when the plantations are too shaded.

access to enough capital or assets other than their own labour. Therefore these farmers are motivated by organic to aspire towards getting a higher income.

Other communities appear to be less driven by income, even though they have considerable proportions of migrants. Farmers perceive that training is the most important benefit because it allows them to improve their systems, and produce in a more sustainable way. In these communities acquiring knowledge seems to be paramount to improve their livelihoods. It demonstrates that the effort that AE/LBI is investing in training has resulted in a positive perception for men in the community although training was not perceived as motivational factor for women in Kwabena Ofori.

In communities with majority of landowners, process of 'experimentation' with Organic/RA practices in one farm are important. This process of experimentation allows farmers to think carefully about the implications of such practices on crop management, labour requirements and tree performance. This process suggests that farmers are considering practices as risky and minimizing the risk (by trying first in some farms) is considered to be important. Additionally, being part of a group represents perceived benefits such as the ones described before. Therefore farmers consider it important to belong to the group even with a small piece of land in order to avoid being excluded.

In terms of parallel production, although it is perceived as desirable from risk management perspective, it also poses some challenges. The NOP allows split operations, but efforts are needed to prevent commingling and contamination from non-certified farm units[32]. Furthermore, for the UE parallel production[33] is not allowed. In the case of a perennial crop, which is the case of the cocoa, the EU allows parallel production for a maximum of 5 years[34]. This period is provided in order to give the farmers time to convert his entire operation in more gradual manner. Despite the deadline being 5 years, a conversion plan must be in place in the first year to document the planned conversion while the entire operation is subject to audit.

Constraints

This study shows that in the communities with a higher proportion of migrants the most important constraints associated with organic certification are weeding for women and pest control for men. This is related to the gender roles in farming, as women usually help in weeding, whereas men are in charge of pest and disease control. Similar constraints have been found in previous studies about the adoption of technologies such as Integrated Pest Management (IPM) in cocoa farms in Ghana. In such study, neem

[32] NOP. 205.202, 205.272 a.

[33] "Parallel Production refers to any production where the same unit is growing, breeding, handling or processing the same products in a certified organic system as well as a non-certified or nonorganic system. A situation with "organic" and "in conversion" production of the same product is also parallel production. Parallel production is a special instance of split production" (IFOAM, 2010).

[34] UE art. 17 CE834/2007 and art 30, 31, 40 CE889/2008.

seeds were not available and labour intensiveness in addition to high capital demand to purchase neem seeds was found to influence the motivation of farmers to adopt IPM (Dormon, *et al.*, 2007).

We argue in this study that the constraints for higher labour demand on these communities might be related to the type of farmers living in the community, who are mostly *Abunus* and caretakers that depend on their own family labour. In fact, weeds represent serious constraints for farmers to expanding production and to increase productivity and weeding represent one of the highest labour demand activities (Awanyo, 2001).

In the communities with higher proportion of landowners such in Anansu, perceived constraints related to inputs for pest and diseases control were remarkable, especially the delay of neem application in their farms. This is important to explore because in the community there are lobbies that are promoting both conventional and sustainable agricultural development approaches. Farmers are in constant interaction, sharing information which motivates or discourages them to follow certain trajectories.

The influence that other actors have on the decision making process, which partially shape what trajectories farmers will pursue cannot be neglected. In the Mapping of Sustainable Production in the Ghanaian Cocoa chain, it is mentioned that the LBC's do not normally pay a premium over and above the minimum price, even though that was one of the objectives of the liberalization of the internal marketing of cocoa. LBCs use different incentives to retain farmers including: credit facilities, extension services or gifts (such as boots or equipment). Some LBCs try to pay a bonus at the end of the year to farmers in addition to any bonus paid by COCOBOD. Farmers expressed the desire to increase productivity by obtaining crucial farm inputs such as insecticides and fertilizers. (Institute of Development Studies and the University of Ghana, 2005). This was indeed expressed by farmers in Nyinahini, where Purchase Clerks (PC's) are offering loans for buying fertilizers or other kind of inputs. It attracts farmers and/or makes them dependent on selling their production to them. This shows that farmers are constantly weighing multiple considerations and their choices are affected by perceived risk, incentives and constraints.

There were only few issues concerning the RA standard. This may be due to the short period the project has been operational and farmers may not be fully aware of all the certification requirements. Apparently they know more about organic farming, as was evident from their narratives in which they mentioned 'organic' being a certification standard. Still as Ayenor *et al.* (2004) mentioned, the concept of organic cocoa is to a certain extent new in Ghana, even though some organic practices have been traditionally used by farmers. So far, there were no farmers referring to RA standards, besides the field officers. The main issue related to RA was the prohibition of child labour in certification. This increased awareness may be the result of activities of CRADA which is a NGO working for abolition of child labour.

In my view, the motivations are clearly affected by interactions between farmer, and the way the benefits of certification are being portrayed to the farmers. My stay in the case study regions was too short, to fully

explore some of the underlying mechanisms affecting the decision making process, including the way field officers communicate the benefits of being part of the certified farmers group. Indeed, this is a concern of *AE/LBI*; if premium prices are being emphasized as the main benefit of certification this might induce the motivation of the farmers towards increase in income. Thus the other benefits of sustainable agriculture may become less significant.

Influence of social differentiation in farming decisions

The results show that even if some farmers are motivated to pursue certified organic production, in some occasions this is not possible because another person is making the final decision. This is the case of the individuals that have arrangements with landowners. Amanor (1994) argues that cropping decisions are being made by non-farming landlords who demand that tenants grow cocoa. Takane (2000) argues that landowners often give guidelines on certain aspects, such as the variety of the cocoa they should plant while decisions concerning cultivation practices and sales are also made by the landowner (Knudsen and Fold, 2011).

In this specific study it was shown that, trust built between landowner and caretaker is relevant to acquire certain degree of autonomy in terms of farm management decisions. However, complete freedom to decide is not present. These social relations are important especially in the context of some individuals not willing to participate in organic farming being forced to implement such practices because the owner became interested in this kind of system. This underlines the importance of trustworthiness in these types of social arrangements, where individuals with their agency and abilities to communicate what they believe in, play an important role. It is obvious that there are factors related to social structure and relations of power within the local communities that affect the trajectories farmers and that this affects the motivation of participating farmers to explore certified cocoa production practices.

6 STRATEGIES AND CONDITIONS NEEDED FOR CERTIFIED COCOA

If the land is not being improved, acreage gives no idea at all of the scale of agricultural operations; it gives no correct idea at all if besides this there are so many substantial differences between farms in the method of cultivation, the intensity of agriculture, the method of field cropping, quantities of fertilizers, the use of machinery, the character of livestock farming, etc.(Lenin, 1964)

Organizations supporting farmers during the development process, look at farmers needs, explore what kind of assets farmers require (average size farm, etc) in order to satisfy their needs. Nonetheless, not all the farmers are satisfied by the same conditions since various factors, including capital, labour availability, and productivity, size of the household, agricultural and non-agricultural activities affect this issue. Farm size is not a reliable indicator for assessing whether a farmer could sustain his family. In some cases a farmer can live from one acre of cocoa with an annual production of 20 bags while others would need two acres to produce the same amount of cocoa. In this chapter I describe strategies from farmers and experts' perspectives to delineate what strategies and conditions are needed for the production of certified cocoa and highlights important elements to consider when implementing certification schemes.

6.1 Strategies and conditions

6.1.1 Farmers' perspectives

Farmers were asked to define viable strategies to make cocoa farming more attractive not only for them but for future generations. Different strategies evolved from the focus groups and are summarized in Table 6.1. The results of focus groups and individual interviews were mostly referring to basic needs as a priority to make the activity more attractive, even though I tried to reformulate the question several times in order to find strategies for farming. When farming was mentioned, people argued that fulfilling the basic needs are very important to keep people in cocoa farming and not migrating to the cities.

Table 6.1. Conditions to make cocoa farming more attractive from farmers' point of view

Men	Better education Access to electricity Good drinking water Good prices of cocoa as incentive for young people Availability of hybrid seeds
Women	Improving road infrastructure Access to medical centers and hospitals Soft loans to open new enterprises apart from farming Premium price

Data from the focus groups. Women N=41 Men N=61

In the case of men, they mentioned as priority the access to electricity and drinking water, as well as better education, because of the difficulty to convince children to study in the community as they believe that the education in the cities is better. If we look at the schools in the communities, there are two main schools located in Anansu; one private and one public school. These are the closest to the other communities of Nyinahini area. In informal conversations with the directors of both schools and unexpected visits some differences could be perceived. In the public school children were often free after a couple of hours and many times they were playing outside because there were no classes. Discussing with people in the community, they mentioned that due to the conditions in the community (lack of electricity mainly) many teachers are not willing to come and stay in the villages affecting the amount of classes children receive.

The quality of the education is perceived as important as well. Teenagers feel that they need to speak English to attend higher levels of education in the cities, as there are no centres for higher education in the communities. In the private school, the majority of children have classes mainly in English, whereas in the public school, the classes in the first levels are mostly taught in Twi. During informal conversations with children in the community, those children from the private school could maintain a conversation in English whereas similar aged children attending the public school had more difficulties in doing so.

Besides education, in the case of women, road infrastructure was mentioned. Women perceive that with better road there will be easier access to Bibiani market, and more public transport (*trotros*[35]or taxis) would be willing to give service in this area. Women trade plantain and other food crops in Bibiani market, which is held once per week. Sometimes the public transport is overloaded making difficult for them to transport their produce to the market. Although some may have capital to hire a taxi, several times people cannot carry all the plantain and other food crops because the *trotro* is fully loaded with other farmers' products. Sometimes, people can get public transportation after hours of waiting, but when they arrive to the market the main buyers (people from Tema, Takorade, and Accra) have already gone. Thus, some middle men take advantage of this situation and lower the price of the products, forcing farmers to sell their produce at a much lower price which greatly impacts family income.

Furthermore, women mentioned that medical centers and hospitals might make young people to stay. Currently, the closest medical center is approximately three hours drive from the villages. When the interviews and focus groups were performed, women mentioned that this situation is very difficult; some of them have lost their children because of this issue. Indeed, one of the caretaker women interviewed could not express anything more than sadness when she was asked about her children. She mentioned '*I have only one, as two of them have died because I could not reach the hospital in time'*. When listening to this story,

[35] *Trotros* are minivans that provide an important public service in the village. It is the most common transportation in Nyinahini area. They are crucial for transporting goods to the market. It is therefore more relevant for the commercialization of food crops to Bibiani market, than for the commercialization of cocoa, as the later is sold in the area.

one can realize that farmers as individuals need to solve basic things. This is part of the strategy to keep young people in the villages.

Besides basic needs, women mentioned that receiving premium prices will provide an incentive for people to stay in the community, instead of trying to make money in the cities. However, they mentioned that the scarcity of land is a constraint, as many young people cannot find land for farming. Migrating to the cities represents a new venture for them, even though, at a certain point, people are willing to come back to the villages to farm again. Farmers perceive that young people will become more attached to the land if they see that their parents are earning enough money from cocoa farming. This was mentioned by women and men in the focus groups. They mentioned that children will respect their father if they see that he is successful in producing cocoa, and therefore they will stay to get their own income from this crop. Moreover, women mentioned that access to soft loans might help them to open commercial enterprises in the community in addition to farming[36].

The only strategy related to farming itself, was mentioned by men in one of the focus groups. They mentioned that improving the access of hybrids seeds would help to improve the yields from the cocoa plantations. They mentioned that if they received hybrid seeds they would not take seeds from other farms[37]. Although this was the only strategy emerging from the focus groups, it was possible to explore scenarios from the farmers' perspective in the case studies which will be further elaborated in Chapter 7.

6.1.2 Experts' perspectives

To broaden the debate on what a farmer should need to live from the activity, some experts were interviewed, including one expert from the Sustainable Tree Crop Production (STCP), the field supervisor from AE/LBI, an international advisor representative of RA, and an organic consultant (ex-professor of CATIE and expert in organic cocoa). According to the experts the strategies to make cocoa production a more appealing activity are mainly related to the intensity of production.

There are a lot of differences in terms of conditions and strategies for farmers if we look at the diversity of management and intensity (Echeverri, 2011, personal communication). The expert' vision in Latin America give us an idea of such differences. For example, in this particular context, some farmers produce only 100-150 kg of cocoa/ha when they do not manage the cocoa plantation at all, but if farmers control at least pests and diseases they can get 200 to 300 kg of cocoa/ha. Farmers that replace unproductive trees, improve shade tree management and control pests and diseases may get 300 to 400 kg

[36] Women are interested in other activities besides farming; among them, food vending, petty trading, hair plaiting. In the communities there are some traders and vendors. It is possible to see women selling food placing a small table in front of their households, where children go to buy food during school breaks. Other women, especially teenagers can be seen walking around with a basket loaded with various elements such as food (tomatoes, okra,etc) and others with clothing or other accessories.

[37] This is related to the type of farmer and their access to and use of hybrid seeds.

of cocoa/ha. In addition to this, farmers who also apply organic manure, may increase the yield to obtain 500 or 800 kg of cocoa/ha. Some commercial farmers who use improved varieties combined with optimal agronomic management practices such as applying at least 8-10 kg of fertilizer per plant may produce 800 to 1500 kg of cocoa/ha. Furthermore, Echeverri (personal communication, 2011) mentioned that the ideal scenario for a small scale farmer (with 1 or 2 children) using only family labour, should not exceed the 4-5 has to keep the production costs low and to make a relatively efficient management of the farm.

Although this scenario applies to Latin America, it gives some insights into the potential of the crop according to different forms of management. The expert argued that besides the management, labour and general input availability influence farmers' performance. An important variable in organic farming productivity is whether or not organic fertilizer is used. Plant nutrition (as measured by need for organic fertilizer per plant) depends mainly on i) soil fertility, ii) management of cover crops and plants associated with the cocoa (their ability to incorporate litter to the soil), iii) the harvest (the greater the harvest, the higher the nutrient requirements), and iv) distribution and quantity of light and rainfall in the area (Echeverri, 2010, personal communication).

In the specific context of Ghana, according to the local field supervisor, farmers can sustain themselves by growing about five acres of cocoa with a productivity of 10 bags of cocoa per acre (Kuadzi, personal communication, 2010). To achieve this yield level, farmers should use sound agronomic practices, including weeding at least three times per year, and fertilize the land with at least 15 bags of poultry manure per acre. Concerning pest and disease control, farmers should spray, taking into account the cycle of the pest, thereby spraying when the pest is still in its immature states before the yield losses are too high which requires at least three applications of neem, the first one being in March.

Apart from sound agronomic practices, Kuadzi (personal communication, 2010) argued that forming groups or associations is paramount, because farmers thereby may secure soft loans and gain better access to inputs. This is relevant for the implementation of sustainable system in the case of organic farmers who are depending on neem and chicken manure as part of the agronomic practices. Experts agreed that without an association, it may be difficult for farmers to acquire inputs while current supplies by AE/LBI are not enough to ensure for maximum production. Neem access is more complex and requires better logistics as it has to be brought from the Northern region of Ghana. Thus, access to inputs is a key limitation for farmers in the study area.

Additionally, even if farmers can get good income from cocoa, the field supervisor mentioned that when farmers get the income from cocoa, they spend their money without saving for the off-season. This pushes farmers to get loans to sustain their family during the rest of the year. Therefore, it is considered as important that farmers recognize cocoa farming as a business. The expert mentioned that this is an important aspect that needs to be included in the trainings, where farmers are asked to budget the cost of

all production inputs, including labour, for them to learn how much money is spent in this agricultural activity.

According to Agyeman from Sustainable Tree Crop Production (STCP) (personal communication, 2010) and Mensah from Rain Forest Alliance (personal communication, 2010), the strategy for farmers to realize sustainable schemes requires intensification. Agyeman (2010) mentioned '*Currently we are looking at intensification. Until now most of the increase of outcome has come from land expansion, but if we continue to expand with these systems of land tenure, we cannot expand anymore*'. The expert argues that to increase the yield per acre would be the ideal scenario. Farmers should increase production by increasing yield rather than expanding their land holdings. This may be realized by the use of improved varieties, adequate pest and disease control, and sound agronomic practices.

6.1.3 Structural differences and interaction with implementation of standards

After comparing farmers' and experts' strategies, the interaction between structural differences between farmers and adoption of certification standards will be described in the following section. This will help to understand important issues one must consider when looking at the adoption of specific technology or new schemes for farmers in the communities. Structural differences directly influence the implementation of sustainable standards. However, this influence greatly depends on the specific context. Some of the underlying mechanisms of the interaction between adoption of sustainable standards and different farmers' type are presented. This analysis was based on my personal insights and solicited opinions of experts.

Training

It appears that in certain cases individuals involved in sharecropping arrangements receive training while in others they do not. Agyeman (2010) mentioned that one must consider who attends the trainings. In the case of STCP, the communities choose who the trainer of the farmers is and not the organization. As stated before, in some occasions the absentee landowner does not participate in the trainings, but he is the one who takes the final decisions about land management. In other cases, the landowner participated in the trainings while the caretaker was the one implementing the practices. In this respect, Laven (2010) depicted an example from an association where she argues that the majority of farmers who received training were the farm owners and not the caretakers. Thus, this aspect needs to be addressed.

Income

There is, to a certain extent, a wider *room for manoeuvre* in the case of landowners. In a visualization of agroforestry system, landowners can grow food crops or generate income from other lands, and consequently, they can 'choose' not to receive income from a farm during some time, whereas for *Abunu*s and *Dɔ didi*, this might be difficult because they have less assets and food crops are essential to them, especially during initial crop establishing when cocoa is not generating any income yet. According to the

STCP, if there is no guarantee of a premium price, there could be problems because of the price elasticity of local farming systems which implies that input prices increase as well when the product price increases. Therefore, if the certification results in additional or higher cost (certification fees, labour, trees, etc) this cost has to be recouped by increased farm output as well. However, if prices are not being increased and/or if production drops while farmers have to invest more labor and capital when producing organic, farmers may be inclined to revert to conventional farming.

Higher labour

Certification also requires changes in the production system, as farmers anticipated increased weeding requirements and higher labour demand. Furthermore, as there is lack of valorization of their own labour, farmers, mainly migrants lack the means to invest in hired labour. According to the experts most of the time farmers do not allocate themselves a wage, thus everything that they receive becomes a profit for them. As it was mentioned before, this is probably the reason why most of the time they spend all their money and have to apply for additional loans.

Pressure from both sides

The competing claim factors in which both organic and conventional bodies may engage farmers, which was proposed before, was also mentioned by Agyeman (2010). The expert argued that even in remote areas in Ghana agrochemical businessmen try to convince farmers of the effect of these pesticides in their crops, as well as organizations aim to motivate farmers towards other way of farming. It is clear as it was mentioned in the introduction of this study, that incentives from the Government to promote high intensive input farming also play an important role in process of farmers' motivation.

Declaration of all land holders

The expert from Rainforest Alliance mentioned that farmers need to declare all their land holdings when they are willing to participate in RA certification. Although this is difficult, since RA is a voluntary process, all farmers work towards sustainability by their own choice and, therefore, once the farmer makes a decision, he has to make a commitment to comply with the standard. In the discussion with the expert it was clear that landowners are pushed to declare or convert all the farms they possess. However, this is not the case for caretakers, as they cannot impose the landowner to participate in certification. This implies that there is flexibility towards caretakers in this regard, but not towards landowners. The expert mentioned that in such cases it is expected that the Internal Control System (ICS) gives individuals the support they require. Therefore, if they have more than two farms to declare, the ICS should work as a support for the farmer in order for him to be able to comply with the standards as farmers should be fully committed to the standard.

Long term investments

The challenge according to the experts is to convince farmers that the investment in shade trees would procure benefits. It is a long-term investment that would represent economic results in 10 or more years when timber species are included. Thus, this economic potential definitely influences the willingness of certain farmers to grow shade trees. The construction of sustainability as it is attributed by standards such RA, might be more difficult to internalize by Caretakers/*'Dɔ didi'* who live their day-to-day existence. To think about incorporation of shade trees and agro biodiversity thus is a more complex process for this type of farmers.

This is in line with studies where the major reason for eliminating trees species during land preparation appeared to be to create an optimal environment for establishment of food crops (Ameyaw *et al.,* 2003). In another study of agroforestry adoption, it was found that landowners and caretakers were implementing the technology, but land tenure was creating difficulties for such adoption. It was mentioned that the landowners were concerned about the possibility of perspective land claims if tenants were planting trees. In addition, caretakers were not pruning the trees to fertilize the land, but they were using the trees as firewood instead. The author mentioned that due to lack of labour and credit, farmers were unable to expand or improve on agroforestry project (Lado, 1998).

In another study, Onumah (2010) mentioned that owners in Western Region of Ghana do not usually allow migrant farmers to plant timber trees firstly because the space left for cocoa is reduced, secondly because during the harvesting of timber trees cocoa trees may be damaged; and thirdly because farmers perceive the productivity of the cocoa may decrease. Furthermore, if there is no agreement on planting such trees in the farm, and the migrant incorporate timber trees, the owner might claim the ownership of the trees leaving the migrant without any share from the timber selling.

Once more, the interaction between landowner and caretaker is enormously mediated by trust and communication. However, when analyzing the benefits of agroforestry systems more carefully, such as the incorporation of nitrogen fixing trees and harvest of non timber products, both parties may find incentives to incorporate trees in their cocoa farms provided it will be reflected in a perceived benefit for all parties involved.

Social responsibility

A landowner farmer interested in participating in these schemas to be certified might find some resistance if the caretaker in charge of the management do not perceive the benefits of the new system. Owners might encounter more problems when trying to meet the certification requirements because they are the ones responsible for complying with certification standards. However, most of the times they cannot supervise, whether or not the caretakers are implementing the practices. Additionally, it might be difficult

for landowners to fulfill all the criteria pertaining working conditions and occupational health as it is required by RA, because he is absent during most of cocoa farming activities.

Decision making

As discussed before there are individuals that despite the fact that they want to join sustainable standards, are not able to do so, because they do not make the final decision as it is landowner who does it. Such relations of power greatly affect the participation of individuals who do not posses autonomy in this regard. The same situation can be observed when such relations of power also impact individuals that do not want to adopt perspective certification standards but are expected to do so because the landowner opted to purse these schemes. Thus indicates the importance of the understanding of decision making in processes of adoption certification standards or any other mode of production or technology.

6.2 Discussion and concluding remarks

In this chapter it was shown that strategies vary considerably between views of farmers and experts. Basic services seem to be relevant for farmers, especially for encouraging people to stay in the communities. Understanding what farmers' perceive is important as it brings elements to motivate and provide incentives for young people to continue farming. These results are in line with the results of Dormon *et al.* (2004) who showed that lack of social amenities such as electricity affect labour, investment and maintenance of the cocoa farms in Ghana.

Various scholars observed that people in communities in Ghana typically mention lack of infrastructure, schools, road, networks and hospitals as important constraints (MMYE, 2008; Norde and Duursen, 2003). Lack of infrastructure is considered to be one of the main problems in African countries (Ukaga and Afoaku, 2005) and according to Bogetic *et al.* (2007), one of Ghana's most important constraints to growth and further development. It is paradoxical that the basic needs of cacao farmers are not fulfilled while cacao is one of the most important activities in the country.

In the absence of adequate infrastructure people might be not interested in staying simply because they perceive that both living conditions and future perspectives may be better elsewhere, in the cities or abroad. Although many migrate, some may return to the villages to farm, either because individuals want to keep the vocation of their ancestors (Baah and Garforth, 2008), or because cocoa represents a certain security during old age (Osei-Bonsu, *et al.* (2001) in Asare, 2010; Onumah, 2010).

Improving local infrastructure and basic services still seems critical to ensure sustainable growth and development of local communities. Transportation is important for women, because it influence the profit they get from the food crops such as plantain, and this crop is one of the most important crops for women income (Dzomeku *et al.*, 2007; Onumah, 2010; Vos, 2010). Therefore, improved transportation

would make selling of farm produce easier, cheaper and faster allowing farmers to obtain better prices and more income (Ukaga and Afoaku, 2005).

Experts' strategies were centered on intensification and sound agronomic practices, based on concerns about land scarcity. It is expected that with sound agronomical practices farmers can increase their income by renovating the plantations. However, land scarcity have been pushed individuals to be involved in different sharecropping systems in which sometimes intensification is not the final goal for some farmers.

Finally, in this chapter the interaction between structural differences and certification standards suggested that there are several issues that should be address in order to improve the implementation of such standards. Among them the training, the influence of other sources of income, declaration of all lands, social responsibility and decision making processes.

7 STRUCTURES AND INTERACTION- CASE STUDIES

In this final chapter, I want to synthesize information presented in previous chapters and provide a more in-depth discussion of each group of farmers, the underlying structural differences, their motivations and their view of desirable development scenarios for implementing certified cocoa production. Four case studies selected from each type of farmer will be described. This will provide a good overview of the differences and particularities that makes each case unique. Furthermore, a comparison of land acquisition, cocoa management, labour use, diverse rationalities and decision making process pertaining to cocoa production will be presented.

7.1 Case studies

Table 7.1. Features of the case studies

Type of management	***Region of origin and ethnicity***	***Family members***	***Work On farm***	***Work Off-farm***	***Activity***
Abunu farmer					
Organic	Volta region	Farmer	Yes	No	All farm activities
	Ewe	Wife	Yes	No	All farm activities *
		Daughter	Partially	Yes	Carrying cocoa to drying area
		Daughter	Partially	No	Carrying cocoa to drying area
		Daughter	No	Yes	Does not live in the community
		Son	No	Yes	Teacher in Anansu
		Son	No	No	Student
		Son	No	No	Student
		Grandchild	No	No	-
		Grandchild	No	No	-
		Grandchild	No	No	-
Active Landowner					
Conventional	Ashanti region	Farmer	Yes	Yes	All activities (sometimes)
	Akan	Wife	Partially	Yes	Food vendor in the community
		Daughter	No	No	- (3yrs)
		Daughter	No	No	- (6 yrs)
		Son	No	No	Student (9 yrs)
		Son	No	No	Student (12 yrs)
Caretaker/Dɔ didi					
Organic	North region	Farmer	Yes	Yes	All activities
	Mamprusi	Partner	No	No	-
		Daughter	No	No	Student (6 yrs)
		Daughter	No	No	Student (5 yrs)
		Son	No	No	-(2 yrs)
Business farmer					
Conventional	Western region Sefwi	Farmer	Partially	Yes	Extension officer
		Wife	Partially	Yes	Nurse
		**			

*Except clearing land and breaking pods. The later is done through nnoboa
** Children data not collected. The business farmer and his family live in Bibiani city.

For the organization supporting farmers in Nyinahini it was important to know what farmers need, and what kind of assets farmers should have (average size farm, etc) in order to satisfy their needs. I used four case studies to analyze how each farmer's type group has different needs and prevailing conditions. The case studies were selected after having determined the typology of farmers and they included representatives for the following farm type: landowner (active farmer), *Abunu*, caretaker/*'Dɔ didi'* and business farmer (see Table 7.1.).

To analyze the situation of each farm type, the case studies were useful in order to realize that every farmer has their specific traits and consequently their own needs or conditions which need to be addressed in prospective certification schemes. The case studies aim to give some insights about the structural differences amongst farmers. The case studies do not include all the types of farmers previously described in the typology (chapter 4). It was the aim, however, to compare landowners and migrant farmers and therefore representatives of these groups were selected. The features of the case studies presented include household data as well as the information related to their main activities in the farm or outside farming.

7.2 Land acquisition

This section describes the land acquisition and emphasizes on the different barriers the farmers had to get access to land. For the migrant farmers it represents a venture in which the use of their own resources and energy is paramount when they are able to be involved in sharecropping arrangements. On the other hand, the landowners depicted in this study, access to land implied a more smooth process[38]. Looking at the landowner-active farmer, he was born in Anansu, and as many of the descendants of the Ashanti, the land was inherited from his family. Most of his relatives are also farmers, who belong to the farm type 'landowners'. In 1981 he started farming, planting palm oil. But, in 2005, he decided to establish a cocoa plantation. For the establishment of this plantation, he used hired labour for clearing the land and planting the cocoa.

The process of acquiring land for *Abunu* involved different challenges. In the case of *Abunu* farmer, he decided to go to Anansu due to the land availability in this region. Once in Anansu, as many farmers in Ghana, he contacted the chief to acquire land for farming[39]. The chief of the village suggested which farmer may have land for *Abunu* and the farmer made a deal with the landowner, which included giving some capital and gifts, as well as having the traditional celebration with liquor in which other individuals are witness of the deal. For him, clearing the land was not an easy process, as many of the newcomers he

[38] However, for landowners, access to land might also represent constraints due to family conflicts within the context of matrilineal system.

[39] The chief manage stool lands and is the chief who can grant the right for farming to new individuals (Hill, 1963). Although the land belongs to the stool, the *Abunu* farmer can obtain half of the land agreed in the arrangement as his own property

had to clear sometimes forest or fallowed land to start the cocoa plantation. '*You have to be hard working to make the landowner happy and at the end you can have half of the land for your own*". *If you work very hard, you get more land, but if you are lazy you only get a small portion of the land*". Clearing the land started in 1996. As he quote '*to clear the land I used my energy and my cutlass'*.

The process of establishing a cocoa plantation involved planting food crops to give shadow to the young cocoa plants. The farmer mentions '*you have to grow it gradually. If you do not have money for labour you have to do it step by step'*. Because he did not have money to hire labourers, the process was done mainly by himself and his wife. After the farmer cleared the land, the wife participated in planting crops such as plantain, cassava, cocoyam and yam, which are important crops to give shadow to the young cocoa trees, but also represent food for the household and in coming years an extra income from the system.

In the case of Caretaker/*Dɔ didi* farmer, as many migrants from the North, this farmer came to the village in 2007 looking for land to farm. He is originally from Bunkpurugu-Yunyoo, North region where he had been farming his father's land, growing mainly maize and beans. Some of his relatives came first and told him about these lands. But as land is becoming scarce, he did not find any land for *Abunu*. Therefore, he negotiated with a person to grow his food crops on his land in exchange for weeding and other practices in the landowner's cocoa farm. At the same time someone offered him to work as a caretaker on a farm of an absentee landowner who lives in Kumasi city. He started to work for him with another caretaker.

For the business farmer, the process of land acquisition was less complex, as his wife is an Ashanti woman who inherited the land from her parents. The farmer has been working in agriculture, and has a lot of experience in cocoa farming and was also trained by MOFA in the use of improved agronomic practices. The availability of land and his agronomic knowledge influenced his decision to establish a cocoa plantation for which he used hired labour which he supervised using high quality seedlings and optimal tree density, among other best agricultural practices.

7.3 Cropping systems

Every farmer has his/her own way to manage the land, and this involves decisions that affect the configuration of the farming systems as related to different factors and rationalities (see Table 7.2.). As stated before, in some cases the person in charge of the farm does not have complete control of the land, as they are under the decisions of someone else; such is the case of caretakers.

Cocoa plantation configuration

If we look at the Landowner-active farmer, he has a farm of 10 acres; seven acres cultivated with hybrid cocoa and three acres for food crops involving mixed cropping of plantain, cassava, cocoyam and rice.

These crops are important, because they provide extra family income. Besides those crops, the farmer grows garden eggs[40], okra and tomatoes for home-consumption.

Table 7.2. Configuration of the systems of different case studies

Farming system	Plot	Crops	sowing year	Farm size
Landowner (active farmer)	1	Hybrid Cocoa	2005	7 acres
	2	Mix cropping (plantain, cassava, cocoyam, rice) garden eggs, okra, tomatoes.	Continuously	3 acres
Abunu	1	Cocoa (open pollinated)	1995	6 acres
	2	Cocoa (open pollinated)	2009	
	3	Mix cropping(plantain, cassava, cocoyam, maize) pepper, tomatoes, garden eggs		1 acre
Caretaker/*Dɔ didi*	1(Caretaker)	Cocoa (n.d.)	1995	26 acres*
	2 (*Dɔ didi*)	Mix cropping (plantain, cocoyam, maize)	2007	3 acres
Business farmer	1	Hybrid Cocoa	2004	4 acres
	2-5	Fallow and plantain cassava, cocoyam, yam, tomatoes, pepper, okra		7 acres

*This is the total size of the farm in which the caretaker works with another caretaker. From the yield of this farm, he obtains one quarter of the total production.

In the case of the *Abunu*, his farm has a total of seven acres, from which one acre is for food crops and the rest for cocoa. Cultivation of one area started in 1995, the other in 2009, and the new one was cultivated since the beginning of 2010. Food crops are also important for *Abunu* not only for self-consumption but also for extra income. Maize has been an important crop that brings the family fast cash.

The Caretaker/*Dɔ didi* farmer works with another caretaker on a farm of 26 acres (2 caretakers for the whole farm). He started working when the plantation was more than 10 years old. From this farm, he and the other caretaker earn half of what is produced and the other half goes to the landowner of the land. Besides this job, the farmer has borrowed a plot of three acres, to grow food for his family (*Dɔ didi*). In this plot he grows plantain, cocoyam and maize. Although the majority of what is produced is consumed in the household, a certain amount of the plantain he produces is sold on the Bibiani market to generate extra income. The farmer also has 15 sheep in his hometown, from which he also earns some income.

[40] Garden eggs is the common name in Ghana for *Solanum melongena* (eggplant).

In the case of the business farmer, he has established four acres of hybrid cocoa and in this plot he exclusively has cocoa, but on the other lands he grows cassava, cocoyam, yam and vegetables such as tomatoes, pepper and okra mainly for selling to buyers with whom he has contracts.

In terms of plant material for the cocoa plantation, the landowner, as well as the business farmer uses hybrid cocoa seedlings from CRIG. In the case of *Abunu*, the cocoa seedlings were obtained by weeding a neighbouring farm which in turn provided him with the seedlings for his plantation. The origin of the seedlings was not known by the caretaker/*Dɔ didi*. However, he assumes it is hybrid cocoa.

7.4 Crop establishment

The active landowner as well as the business farmer manages his farm in a conventional way, whereas the *Abunu* and the caretaker/*Dɔ didi* belong to the group of certified farmers of AE/LBI. The different ways they manage the crop are connected with the availability of labour (family or hired) and capital.

Abunu

For *Abunu* the year starts with the clearing of new land[41]. The farmer goes to the farm to clear and weed. His wife supports him by preparing food for him and the rest of the family. It takes approximately one week to clear one acre of land. The already established plantation has to be weeded as well. In February, the farmer burns all the weeds that were cut in January. With the beginning of the raining season (March), the farmer and his wife start planting the food crops gradually and when they are growing, they then plant two seeds of cocoa per hole. This is called '*Atodwe*' which means 'seed by seed'. Sowing can also continue in April. Concerning plantain, the *Abunu* farmer and his wife plant between 50 to 100 plantain plants as well as cassava, cocoyam, yam, maize and a small plot with some vegetables like pepper, tomatoes, garden eggs for home-consumption. The seedlings for food crops sometimes are obtained for free from friends or relatives, others such as yam have to be bought.

May and June is dedicated to weeding and if the farmer wants to clear another plot he does so in July. From June until September a "light crop" is ready to harvest, but the main cocoa harvesting season starts in October and can even last until January. The harvesting is mainly done by the farmer himself and it can be done in approximately three days. Once the pods are harvested his wife and daughters help by collecting and carrying the pods to the breaking pod place, this takes approximately three days. Once the pods are ready for breaking, the *Abunu* farmer informs the members of the 'breaking pod association' to help him breaking the pods. Generally six or eight men gather together to break the pods, this is called *nnoboa*.

[41] Usually slashing and burning is a common method of preparing farm fields in southern Ghana (Yiridoe and Anchirinah, 2005). There are different tools to prepare land and this is related with the ethnic groups, as some prefer use of cutlasses using a minimum tillage cultivation others use hoe cultivation (Adjei-Nsiah, 2006).

His wife and daughters are in charge of preparing the food for the group of men. After breaking pods, the cocoa beans are ready to ferment. Fermentation takes seven days and after this process, the cocoa beans are transported to the drying area close to the house. As the farm is far from the house, the farmer hires a car for 20 GH₵ to bring the cocoa beans to the drying area. The farmer and his wife both participate in drying the cocoa. This can be done in six days if there is good sunlight or two weeks if it rains. Regarding soil fertility, the farmer has applied three bags of chicken manure which were provided by AE/LBI, although it is clearly not sufficient to fertilize his whole farm.

Landowner

The landowner-active farmer hires two labourers for all the activities. They work under contract for one year. In February, the farmer and the labourers clear the land for food crops. When he establishes the plantations he also grows food crops first to give shade to the young cocoa trees. The farmer grows food crops for three years, but this period depends on when the farmer sees that the cocoa starts competing with these crops. In the case of food crops, he had to buy the suckers for plantain and acquire material for cocoyam and cassava from his relatives. Sometimes in the case of the rice, the buyer helps him to buy inputs, but sometimes, if he cannot arrange this deal with the buyers, he has to buy the inputs by himself.

In the already established cocoa plantation, he uses fertilizer (Cocofeed) once per year. This fertilizer is bought by himself through the PC. They give him the option of paying half of the price when he acquires fertilizer and half when he sells the cocoa to them which he prefers. The farmer applies three bags per acre, which he thinks is enough for soil fertility as he has heard that this is recommend rate for this crop.

Caretaker/Dɔ didi

The Caretaker/*Dɔ didi* farmer mentions: '*I use all my strength to clear the land for 'Dɔ didi', I cannot hire anybody as I do not have money'*. To clear land and chop trees takes the farmer at least four weeks. To start planting, the farmer sows maize first, and then, when he harvests the maize he starts planting the plantain and cassava. The 500 plantain suckers are purchased and for cassava the planting material is obtained in exchange for labour (weeding). The maize seeds has to be bought, but the costs for this material is very low (3 GH₵ /Kg.). In the case of the cocoa plantation, the division of the income is as follow: 4 parts are considered in which the owner takes two and the rest is shared among the 2 caretakers. For the harvesting, the farmer uses *nnoboa* (around 17 people) to harvest the total production of the farm. Participating in the breaking pod association implies certain capital, as the farmers must invest 2 GH₵ every time people go to break pods, which sometimes is done more than 5 times per year. He clarifies that even if this represent certain capital, it is advantageous to use *nnoboa* because as he mentioned '*one alone cannot do the work*'

Concerning soil fertility of the cocoa plantation, in the past, chemical fertilizer was applied once per year. The costs were sometimes assumed by the landowner. However, since the caretaker/*Dɔ didi* farmer

joined the project, no chemical fertilizer has been applied. Instead, the farmer has applied 3 bags of manure received from *AE/LBI*. This amount is not sufficient to fertilize the farm of 26 acres. In the case of the *Dɔ didi* plot, the farmer does not use any fertilizer. The farmer perceives that application of fertilizer is not needed. When asking the farmer about fertility, he mentioned that the land is fertile and the crops grow without any fertilizer.

Business farmer

The business farmer pays large amounts of money to labourers due to his intense farming methods. He mentioned that if he wants to clear the land he uses 500 plantain suckers and 500 cocoa seedlings which are purchased by the farmer. After clearing the land, the farmer makes sure that the labourers create fire belts, burn the weeds and collect the debris to prepare the land for planting. During the entire year many activities are performed, such as weeding at least three times per year, adequate pruning, removal of chupons, and the application of pesticides to control pests and diseases.

Clearly, the ability to farmers to shape their systems is an outcome of many factors in which labour and capital are important elements to transform the land and establish the cocoa plantations. Capital represents advantages when establishing the plantation as it is related to access to seeds and availability of labour.

7.5 Pest and disease control

In this section the different ways of control pest and diseases of the different case studies is described. According to the *Abunu* farmer, the main problem in his farm is the mirids (insects from the family Miridae), although black pod is also present, but the incidence is very low. In the past, the mirids were controlled by applying Confidor® and/or Akate Master® (Bifenthrin) at least three times per year. The *Abunu* farmer received support from the landowner to buy these insecticides. However, now that he has joined the project, he does not spray the farm, as he will wait for the application of neem. Sound agricultural practices such as pruning and thinning are being implemented. The farmer is conscious about the importance of keeping the right trees density to ensure adequate aeration and light penetration, which minimizes the incidence of black pod in the plantation (the trainings with AE/LBI have help him to learn all of this practices).

The landowner farmer uses conventional farming practices to grow cocoa. Funguran-OH® is used for the control of black pod when the cocoa pods are still young and Ridomil® when the pods are mature[42]. The farmer stated that it is important to apply these products because "*with only shade management you cannot control black pod*". These fungicides are supplied by the government trough the collective spray programme.

[42] In terms of quantity the farmer uses 20 sachets (50 gram/each)/2 acres, three times per year.

Thus, theoretically the farmer does not have to invest money for those products. However, the frequency by which his plantation is being sprayed is very low. Sometimes, he can only spray once a year. It is for this reason that the farmer prefers to purchase the products himself and ask his labourers to spray because in this way he does not have to wait and the application is better done. The farmer mentioned that "*sometimes the spraying gang rush so much, and the product is not well applied*". For the control of mirids, Confidor® is used. The cost of this product is paid by the farmer[43]. The farmer is conscious about the importance of monitoring the incidence of black pods and the removal of chupons to keep high productivity.

In the case of caretaker/*Dɔ didi,* before the farm was registered with the organic group, pesticides were used in the cocoa farm. They used Confidor® and Funguran-OH®. Sometimes, the collective pest control team was spraying the farm for free, but if they did not come the farmers borne the cost themselves. Currently *Dɔ didi* is following organic practices. For pest and disease control the farmer was waiting for the application of the neem extract, which had not been received yet. In the *Dɔ didi* plot, which is not included in the list of Nyinahini group, the herbicide (Atrazine®[44]) for the production of maize is used. After sowing, no agrochemicals are applied to control pest and diseases or to fertilize the crop in the *Dɔ didi* plot.

The business farmer uses Confidor® for the control of mirids. Five applications of this product per year are made. For the control of black pods, two application of Funguran-OH® are made when the pods are still small as well as two applications of Ridomil® when they are mature. The calendar of application followed by the farmer is the one suggested by Cocoa CAA, which is an association of farmers certified under UTZ good inside certification. As the farmer needs the application to be on time, he cannot depend on the collective spray programme for the control of pests and diseases. Therefore, for all the applications of agrochemicals he hires labourers. The farmer follows sound agricultural practices; hence, monitoring the incidence of pests and diseases is a priority for him.

7.6 Labour arrangements

As it described before, *Abunu* uses mainly family labour for his activities on the farm. Sometimes the farmer can hire someone for certain activities, but in general it is himself and his wife who are in charge of all farm activities. However, his two daughters help in carrying cocoa from the farm to the drying

[43] It is supposed that this insecticide is not for commercial distribution because it is part of the technological package that the government is giving to the farmers through the Collective Spraying Programme. I did not explore this in detail but in some informal conversations with a group of men, one of them came with the product in which indeed is mentioned 'not for sale' and the man mentioned that even if the government give them these inputs for free, some people still sell them for 10 GHC/bottle.

44 Farmers in Ghana have been using Atrazine in their maize fields because of earlier recommendations (GGDP, 1992 cited by Aflakpui *et al.*, 2007)

area[45]. The activities that require most labour are weeding and clearing. In total the farmer invest approximately 770 hours in farming (see Appendix A1.). This without considering the hours invested in *nnoboa*, where the farmer has to go to support other farmers, the hours he might expend in meetings, trainings, social gathering, and market days.

In contrast, two persons are hired by the landowner with a yearly wage of 250GH₵. The farmer mentioned that '*Migrants are hardworking people, you will feed them, give them clothes and everything and they become labourers to you. You control the person, but all the expenses are your own. You tell them what they should do. The farmer signs a contract for one year and at the end of the year the labourer and you, the landowner, will decide if they will continue farming for you'*.

Furthermore the landowner argues that it is difficult to obtain labourers, as well as to keep them motivated to work in the farm. He explained that '*they are not easy to come by… you cannot get them. And if you do, they will also stay depending on how you entertain the person, whether he likes to work with you or not. He can go if we decide to do so. And it is also possible to sign a new contract*'…'*there are not plenty in town and everybody is on them, Everybody want to send people to their farms, so you will decide to go for them and you realize they have already been taken by other people'*.

The difficulty of getting labourers is a big concern from the landowner's point of view. Most of the times landowners prefer to work with migrants because they need income and therefore they would be more willing to work. The landowner farmer mentioned '*it is better to work with migrants because they come to work in cocoa farms because they need the money. They are ready to work and don't mind what kind of job they have to do…If such people come from somewhere, they vacated their place and come to this place to work, they do not mind anything because they are ready for money …You cannot get an Akan person to do that job.* When exploring this issue, the farmer made clear that having natives as workers is very rare, as for Akans it is not well to be seen as a labourer of someone else, it is somehow a matter of status. The reason is that the natives do not want to work as labourers because as the landowner mentioned *'they say I am also somebody'*.

Although these arrangements with migrant labourers are desirable for the landowner farmer, because migrants are willing to work, there is certain uncertainty if they will stay working for the landowner at the end of the year contract or not. The degree to which the landowner and the sharecropper establish a good relationship will determine the willingness of both to continue with the contract. If the labourers experience something they do not like, they might find other alternatives. *'If they are not happy they will go away, they will not be a labourer for you anymore, and they want money in order to do something better, elsewhere'*.[46].

[45] Usually the farm is not the place where the farmer lives with his/her family. They usually live in the village and the plots they have are sometimes kilometres away from their living area. Some farmers have more than one plot in different places and even in different villages. The drying areas are sometimes close to the living areas.

[46] When the migrants have houses in the North, they are willing to invest there. The money they earn may for example, be spent on tin roofing, as houses are element of wealth and status. In the North some people have round huts. However tin roofing apparently means a better status than the traditional huts.

The business farmer hires wage labourers for specific activities (see Appendix A2). The labourers he hires are individuals from Burkina Faso who come for work in cocoa farming for a certain period of time. Most of the times, these labourers are readily available. However, sometimes, they work in other farms, making the situation difficult for the business farmer, as labourers are scarce in the community. In such cases, wage labourers from the closest city (Bibiani) have to be hired, thus increasing the labour costs.

The Caretaker/*Dɔ didi* uses his own labour to work in the land where he grows food crops as well as in the farm where he works as caretaker. Weeding is the most demanding activity for the farmer, followed by clearing land and chopping trees. Approximately 1088 hours in the cocoa farm and 756 hours in the *Dɔ didi* farm are invested every year (see appendix A3).

In sum, a clear difference between the four case studies in labour arrangements as indicated above which influence the capacity of individuals to follow certain trajectory and to meet farm objectives. In the following section, the motivation of the farmers to join certification standards will be explored.

7.7 Motivation to join certification schemes

Higher income and training are perceived as the main motivation factor for the *Abunu* farmer. The perception that with organic he can obtain higher yields was an important incentive for adopting organic practices. Training was the second motivation mentioned by this farmer. These trainings have helped him to become aware of the importance of pruning and thinning in reducing yield losses due to black pod. Actually, this farmer was one of the first ones adopting pruning in the community. Although he seems to be very motivated towards organic, there were concerns such as the lack of neem extract and the shortage of chicken manure. The farmer has experienced an increase of pods per plant with the application of chicken manure and he believes he will get good yields implementing organic practices.

Cost reduction is perceived as very important motivation for the *Dɔ didi* farmer. He mentioned that before he joined the group of AE/LBI the farm's expenses were high. He expects to benefit by reducing his production costs by receiving free inputs from AE/LBI; as he expressed '*now the inputs are not costing any money'*. Furthermore, the farmer considers that higher yields can be obtained when applying the new practices recommended by AE/LBI. The increase in the number of pods per plant has made him realize that organic practices are good for the plantation. Training was perceived as the least motivating factor and this might be related to the fact that until now he has not attended any training. Therefore, training has not resulted in a positive perception, as it was the case for other farmers in the communities.

The reasons why the conventional farmers (landowner and business farmer) show no motivation to join the Nyinahini project were explored. A positive attitude was found when the scenario of being inside the group was presented. The landowner farmer, who currently is conventional, considered that it is important to wait until it is proven that the new practices work better for the cocoa plantation. For

example, when he was asked to imagine being part of the Nyinahini project, he mentioned that if weeding is proved to be better for the cocoa farm than herbicides, he would implement it. '*Assuming I have 30 acres, it would be very difficult to use man power for clearing bushes. In my case, I can go for labourers and pay for it. Abunu people they experience difficulties because they cannot employ laborers'*. He also had a positive attitude towards the use of manure. He mentioned that if he experiences that manure application is helping him; he would be willing to purchase the input himself.

The business cocoa farmer did not have a positive attitude towards Organic/RA schemes and he listed three reasons for this. First of all, he does not believe that with organic farming, farmers will be able to acquire high yields. Secondly, the price of the certified cocoa will be crucial, to prove that Organic/RA is profitable. Thirdly, he does not believe farmers will transform their farms completely if there is not a market in place for marketing crops other than cocoa.

In the specific case of Caretaker/*Dɔ didi*, the farmer shows interest in Organic/RA farming because he receives inputs and because he has experienced the increase of yields through organic farming. However, the fact that he uses herbicide in the *Dɔ didi* plot (which is not included in the project) may suggest that this farmer perceive that the use of herbicides is efficient for maize as farmers in Ghana have been using Atrazine in their maize fields because of earlier recommendations (GGDP, 1992 cited by Aflakpui *et al.*, 2007). On the other hand, there is not ready market for organic maize may not motivate him to farm the *Dɔ didi* plot as organic.

The results show that *Abunu* is highly motivated because he has experienced the improvement of his system when practices such as pruning, thinning and fertilizer are applied. This farmer has to sustain 11 individuals, all of them with particular necessities. Therefore the improvement of his system (as he does not have other land) is crucial for his family. The training he has received has deeply influenced his perception towards the proposed new practices. The *Abunu* farmer greatly values the knowledge he has acquired. It is not surprising that gaining of knowledge is important for this farmer, as he mainly depend on his labour and management skills.

The process of experimentation that the landowner perceives as being important is a common strategy that farmers use when they try to minimize the risk of a new technology. Having more land might represent difficulties when converting the entire holding instantaneously. However, when farmers can recognize the direct benefits of a new system, they might be willing to adopt certain practices. The results show that the business farmer seems to be enthusiastic about the way he is farming. The high yields, he obtains by implementing intensive farming, influence his perception towards certification schemes as he does not believe he can obtain the same yields with these new systems.

7.8 Scenarios from farmers' point of view

Current scenario

To come up with development scenarios for transitioning to alternative marketing schemes, farmers were first asked to think about the current situation of the cocoa plantation. Based on this information, a simple socio-economic analysis was conducted to assess the economical performance of different farming systems (see Table 7.3.) in order to have an overview of the current situation. There are for example, some aspects that were not included , among them, the income from the vegetables cultivated by the business farmer, other food crops besides plantain, the certification cost (since it is paid by the project), the cost of the neem extract, and transportation cost (For more detailed information about calculation see Appendix B).

Economical performance

Looking at the Farm Gross Production (FGP), the business farmer gets the highest income from cocoa activity of all the farmers. Even with less acreage, the higher production (10 bags/acre) has a positive impact on the Gross income in comparison with other farmers. However, the high costs of inputs and wages affect his Net Income greatly.

The landowners (both Business and landowner) invested more capital in inputs than the *Abunu* and *Dɔ didi* farmers. The higher costs are mainly related to the purchase of fertilizers and pesticides, whereas *Abunu* and *Dɔ didi* farmers are mainly using chicken manure and neem provided by AE/LBI. The proportional costs are very low for the later type of farmers, because one bag of chicken manure cost 5 GH₵, whereas one bag of fertilizer costs around 20 GH₵. If neem would have been included, the transportation costs of this product might have affected the costs considerably because the neem has to be brought from the northern part of Ghana.

Other crops such as plantain represent additional income for the farmers. The income from these crops is not annual but more spread across the year. Therefore, almost every week farmers can benefit from plantain sales. However, as stressed in previous chapters (see 6.2.1), there are factors that negatively influence the income received from these products. Other crops such as rice and maize are important sources of income as well.

The total amortization expenses are higher for the business farmer and the landowner. This is because these farmers have more expensive equipment, such as the backpack sprayers. The others have low amortization expenses because cutlasses and hoes are the main tools for farming, which do not represent huge investments.

Subtracting all the input costs, contract work and amortization of tools from the Farm Gross Production (FGP), one can calculate the Adjusted Gross Income (AGI). And based on calculated AGI values it

appears that the landowner farmer performed best. In comparison with the Business farmer (who has the higher FGP), the landowner farmer does not invest as much capital in wages as the business farmer. The results show that the high cost of contract work particularly influences the income of the business farmer (4 223 GH₵ for 4 acres).

The landowner farmer had the highest Net Income among all the farmers, although the business farmer had the highest FGP. The main difference in comparison with the business farmer is that he has fixed wages whereas the business farmer has contract work arrangements. The costs involved in labour are very low, although other costs that are not included in this calculation may affect the results. Among them the expenses on cloths, food, transportation and everything that has to be given to the labourers for them to be labourers in the farm.

Table 7.3. Economic indicators of performance of the different farming systems (GH₵)

Indicator		***Owner (active)***	***Business farmer***	***Abunu***	***Caretaker / Dɔdidi***
farm size (acres)		10	4	7	*9.5
bags/acre		3	10	2.7	1.5
GH₵	Cocoa	4200	8000	3200	2000
	Plantain	1040	520	520	780
	Rice/maize	**360		***90	***10
FGP (Farm Gross Production)		***5600***	***8520***	***3810***	***2790***
Inputs		1092	1305	388	187
Contract work		33	4223	23	0
PC (Proportional Costs)		1126	5528	411	187
AV (Agricultural Net Income or Aggregated Value)		***4474***	***2992***	***3399***	***2603***
Total amortization		63	110	9	28
Adjusted gross income		***4412***	***2882***	***3390***	***2575***
Wage paid		500			
Family labour (hours)				770	1844
Family labour in GHC				359	853
Net Income (NI)		***3912***	***2882***	***3390***	***2575***
Net income/acre		***391***	***720***	***547***	***399***

FGP= ∑[Production x surface]x unit price AV= FGP - PC
*Assuming the income of a quarter of the caretaker farm size (26 acres) + 3 acres *Dɔ didi*
Rice * * Maize ***
Note: For detail information about calculations see Appendix A and B.

Even though the FGP of *Abunu* is not as high as the one of the landowner and the business farmer, he manages to obtain very similar results to the ones of landowner farmer while his Net Income on an acre basis is even higher than that of the business farmer. Two factors need to be considered. Firstly, the cost of family labour was not included in the analysis, as farmers do not compensate their own labour. This

means that farmers with family labour such as *Abunu* and Caretaker/ *Dɔdidi* are saving money by working in the farm without involving any hired wage labour[47]. Among these two types of farmers, the caretaker works approximately 1844 hours which represent savings of 853 GH₵, whereas *Abunu* works 770 hours which represents 359 GH₵[48]. Secondly the proportional costs involved in the agricultural activities are greatly different between these two farmers.

However, if we consider the other sources of income besides cocoa, the landowner farmer and the business farmer obtain considerable large income from other activities. I stated before that the vegetable production and the off-farm income from the business farmer was not taken into account, neither was the food vending of the landowner's wife. Therefore, if off-farm and other farm sources of income are included, the income of the farmers would be considerably influenced.

The opportunity costs for family labour in the case of *Abunu* and *Dɔdidi* farmer is considered to be important to analyze for these systems. This is done by comparing it with the income if the farmer worked outside the farm (considering his qualification and the socioeconomic context). The opportunity costs can be the minimum salary in the area, which is 3.73 GH₵/day for a normal agricultural worker. Therefore one can conclude that if the farmers were agricultural wage labourers they would receive an annual income of 900 GH₵ which is much lower than the income the farmers are obtaining at this moment.

A good indicator of the productivity of the system is the Net Income/acre. According to the results, the business farmer has the highest Net Income/acre. This is because the business farmer has the highest productivity among all the farmers because he produces 10bags of cocoa/acre whereas the other farmers produce only 1.5 to 3 bags of cocoa/acre. However, comparing the profit per unit of invested money, it is clear that the performance of the business farmer and the landowner farmer is not as good as the other farmers.

Farmers prioritize different conditions depending on their current situation. Their realities are diverse and influenced by many factors and mechanisms including capital, labour availability, productivity, size of the household, and agricultural and non-agricultural activities. Apparently the income from cocoa farming is sufficient for farmers as it covers their direct expenses in their farm. Their incomes are in the range of other studies where income from cocoa was on average 717 GH₵ with a maximum income of 5 343 GH₵ (Aneani, *et al.*, 2011). According to a baseline survey the total annual crop income for farmers is 1020 GH₵ (Hainmueller, *et al.*, 2011). However, in most of the other studies, additional sources of income besides cocoa are not considered when calculating the income from the household.

[47] Although they might hire some labourers for specific activities (see Annex 1 for case studies and Table 4.2. for a general overview of labour arrangements of the different farming systems

[48] Minimum wage salary 3.73 GHC/day.

Income expenditure

Questions concerning how farmers spend their money emerge from the analysis of the economic performance and the Net Income of the farmers. *Abunu* farmer and Caretaker farmer were asked to think about their annual expenditures. Farmers did give a rough estimation about their annual expenditure (see Table 7.4). According to this information, the caretaker spends approximately 1670 GH₵, whereas the *Abunu* farmer spends 1007 GH₵. This may be considered as the 'bare-minimum reproduction threshold' which is the minimum threshold of income required for a producer family to keep itself.

The education system in Ghana allows children to get access to education as policies have made it free and compulsory for basic level. However, if the farmers want to send children to what is considered to be a 'better' school, they have to pay the fees of the private school which differ for Primary, Junior and Senior high school (see Table 7.5). The public school of the community does not have a senior high school; therefore, some farmers with the willingness of sending the kids to the school require paying for private school.

Education is perceived to be important by all farmers. They are willing to send their children to school to improve their livelihood because it provides opportunities for their children to improve their conditions. However, farmers might encounter difficulties to send children to the better and more expensive private schools because of lack of capital. When children improve their conditions they might migrate, but as the landowner argues, even though most children migrate and exercise their professions in the cities, some of them will return to their villages for farming.

Table 7.4. Cost estimation of education per child/year in the private school of Anansu

School	*Item*	*Primary*	*Junior High*	*Senior High*
Private	Uniform	20	30	40
	School fees	63	96	100
	Feeding	30	30	70
	Text books	3	15	30
	Extra classes	30	30	170
	Sports fees	3	3	10
	First aid	3	3	15
	Total (GH₵)	**152**	**207**	**435**

Source: Director of the private school of Anansu .

The farmers' expenditures (see Table 7.4) do not include all of the other expenditure the farmers may incur. The rough estimation of the expenditures gave us certain idea of their situation. However, it is difficult for the farmers to give a complete picture of what they expend during the year. The calculation of the expenditures is in the range of the annual average household expenditure in rural areas of Ghana which is 1918 GH₵ according to the Ghana Living Standards Survey (GGSL5, 2008).

Table 7.5. Annual expenditures (GH₵) *Abunu* and *Dɔ didi* households

Item	*Abunu*	*Dɔ didi*
Uniforms	50	17
Shoes & clothing	50	15
School fees (15 GHC *2 children*11 months)	330	0
Household expenditures (e.g. food)	990	600
School books	20	10
Housing (rent)	50	0
School feeding	180	[49]365
Total	**1670**	**1007**

Other expenses such as social gatherings and funerals might cause an appreciable reduction in the available income of farmers. Social gatherings and funerals are culturally one of the most important social rituals in Ghana and they may be quite costly. When farmers have spent their income from cocoa and, still need to buy certain things, they might be tempted to ask for a loan from money lenders[50]. The *Abunu* farmer mentioned that after the season people do not have money; consequently, they ask for a loan. *I have a big family and if I need money I have to ask for a loan. The money lenders in the community charge double the amount you borrow, for instance if I borrow 20* GH₵*, I would have to pay 40* GH₵.

Studies have shown that funerals may require large amounts of money because they represent a symbol of gratitude towards the deceased, while in some occasions they this social ritual provides an opportunity to showcase their status within the community (Geest, 2000). According to Mazzucato *et al.* (2006), the death and funerals represents the connection with the ancestors. These authors argue that a person who proved to have lived a successful life will be admitted to the land of the ancestors; therefore, family members want to show that the life of a person was successful by having a big ceremony Geest (2000). Thus, funerals play an important role and influence household expenditures.

Mazzucato *et al.* (2006) showed in their study that the costs of such ceremony is not incurred only by the closest family and the kin, but also by individuals attending the ceremony, as sometimes they have to travel long distances. Attending the ceremony is considered as important, not only for affective reasons, but because, to a certain extent, this social rituals strengthen the social ties with other individuals. According to Hainmueller *et al.* (2011) the farmers in Ashanti region spend on average 80 GH₵ annually on funerals. However, this value seem to be low, and depend to a certain extent on the farmer status, as mentioned before, if farmers need to spend more money in these issues, they would not mind about the capital they need to invest and may be willing to get loans to maintain their status.

[49] The money is divided between 3 children according to their ages as follow. 50 pescuas, 30 pescuas, 20 pescuas for a daily meal in the school. (100 pescuas=1GH₵)

[50] Farmers' indebtedness often increases in direct proportion to his wealth according to Hunter (1961)

Future scenario

Farmers were asked to develop future scenarios with or without support from the AE/LBI (Table 7.6). The landowner farmer believes that 13 acres producing 3 bags/acre would be ideal to be able to live from the activity. The ideal scenario projected by this farmer would be to reserve land for food crops and keep on having other businesses besides cocoa, such as the small food vending store managed by his wife. If there were good roads and there was a high demand for taxis in the community, he would be willing to become a taxi driver again[51]. Even with the most ideal scenario, the landowner farmer believes that not all his children will stay looking after the farm, but some of them will do. He mentions "*It is because of farming that we are here. I know that it is the better job to continue in the place of our grandfathers. My children will do the same. I wanted to follow my father's job. And so will do some of my children, but others will migrate to the cities, some of them for a little while, but some of them will come back*".

The *Abunu* farmer mentioned that the ideal size would be 15 acres, producing 10 bags/acre. To achieve this yield *Abunu* farmer considered four criteria to be met. Firstly, labourers have to be hired for replanting, pruning and weeding. Four people would be necessary for those activities. Secondly, the application of manure should be at least a rate of 6 bags/acre. Thirdly, the neem extract should be applied at least four times/year. Finally better access to hybrid seedlings would represent possibilities to replant with better material. Until now, the farmer has not substituted unproductive plants or changed to a better variety because he finds difficult to get access to hybrid seeds in the community.

Considering the fact that RA promotes diversity in shade trees, the *Abunu* farmer mentioned that when one understand the benefits of shade trees in the cocoa plantation, the traditional way of cultivation changes. He mentioned that '*people cut off the trees because crops won't grow well if there are trees and it is shady.* He says *'cocoa itself is a tree and if there is too much shade, black pod can develop'*. In terms of training required, he believes that trainings should continue mainly in the control of pests and diseases. Thus, more knowledge or information about allowed products for the certification schemes is considered to be important for the *Abunu* farmer.

Facing the fact that the organization will not be there perpetually to support farmers, he expressed positive attitude to find alternatives for acquiring the inputs for the cocoa farm because he is convinced about the benefits of the new practices on his farm. However, contrary to the landowner farmer, the *Abunu* farmer might depend on loans as he implicitly mentioned '*If I do not receive support, I would try to ask for credit to buy manure'*.

Basic needs like electricity were part of the ideal scenario for the Business farmer. As mentioned in the previous chapter, this was also important for all the communities under study. Regarding size, he mentioned that his current acreage is ideal. Besides the current cocoa farm (4 acres) he is planning to cultivate 7 acres more in the coming years. However, managing more land would imply higher labour

[51] The landowner worked for some years as taxi driver in Kumasi city.

demand, and as the farmer expressed, it is difficult to manage a bigger farm, especially because of the labour scarcity.

The caretaker/*Dɔ didi* farmer, value his own labour significantly. In his ideal scenario he mentioned that imagining he could get access to land, he considers a 10 acres farm to be optimal while producing 5 bags/acre. The farmer perceives that this farm would be ideal for him to live from cocoa with his 3 children. However, he stresses the importance of hiring labourers (at least 3) for weeding and harvesting, apart from the *nnoboa* association. *Dɔ didi* farmer mentioned that enough quantities of manure and neem would be needed. In terms of quantities 6 bags of manure/acre and 3 times of neem spraying/year would be enough to produce the expected yield according to this farmer. Furthermore, training on how to manage shade in the plantation would be part of the ideal conditions.

Table 7.6. Ideal scenario according to farmers

	Landowner	*Business famer*	*Abunu*	*Caretaker/Dɔ didi*
Family size	6	2	11	5
Desirable Farm size (acres)	13 (10)	4 (4)	15 (7)	10 (0)
Desirable yield(bags/acre)	3 (3)	10 (10)	10 (2.7)	5 (1.5)
Labour needed	2 labourers	Contract labour	Labour for Replanting, Pruning and weeding (4 labourers)	Labour for weeding and harvesting (3 labourers)
Inputs needed with organic	-		6 bags manure/acre neem (4 times/year)	6 bags/manure/acre neem (3 times/year)
Training needed			-Control pest and diseases -More information about allowed products	- Shade management
Visualization of good scenario	-Off-farm activities -Plots for food crop	-Same acreage -Electricity	-Plots for food crops. -Access to hybrid seedlings.	-Access to land
How farmers visualize expending their income if it is higher?	-Education for his children -Investment in a restaurant for his wife -Taxi. Provided there is demand of this service	-Expand the farm	-Education for his children: -Investment in a house[52]	-Investment in a provision store for his partner -Education for the children
If AE/LBI does not provide any more manure or neem how would the farmer ensure application of inputs?			-Loan	

1 Number in brackets denote current values

Interestingly, the strategies developed by the farmers differed according to the type of farmer. The notion of having other sources of income is considered to be important to them. Thus, for the landowner farmer, the food vending store and the possibility to be taxi driver again shows that these individuals

[52] Currently, the *Abunu* farmer is renting the house where he lives with his family.

prefer not to be exclusively depending on farming as their sole source of income. However, the concept of self sufficiency is also in place, as land for food crops was also being mentioned.

For *Abunu* farmer self sufficiency is part of the ideal scenario. These demonstrate the meaning that this type of farmers attributes to food crops. The economical analysis demonstrate that the income from plantain influence directly the total income from the farm. Additionally, the investment in assets, such as housing is relevant for the farmers. It was shown for example in the case of the *Abunu* farmer, who is willing to invest in a house. Individuals in the communities look for better conditions; therefore, improving their assets is important for individuals and their households and may also impact their status in the community.

7.9 Discussion and concluding remarks

The analysis of the case studies demonstrated that the structural differences influence to a certain extent different factors related to farming and adoption of certification schemes. Firstly, the genetic material of the plantation, as migrants such as the *Abunu* farmer might select the *Atodwe* system whereas landowners with more capital may acquire hybrid seedlings. Migrant farmers attribute this preference to lack of capital and/or accessibility. This choice of seedling material partially influences the inherent capacity of cocoa plants to produce higher yields[53].

Secondly, the diversity of crops and way of cultivation, because farmers such as the *Dɔ didi* and the *Abunu* farmer are highly dependent on food crops such as cassava and plantain, because usually these farmers do not have other assets or sources of income besides these. Landowners, on the other hand, have other sources of income that can support them while the cocoa plantation is being established. Pluriactivity is relevant for the landowners including highly valued crops. This sources of income influence the capital available for input investment, as landowners have more capital to invest for purchasing inputs. However, this is not the case for *Abunu* and Dɔ *didi* farmers who may have fewer assets and do not base their economy on off-farm activities.

Thirdly, the labour arrangements as migrants such as *Abunu* and Dɔ *didi* farmers depend mainly on family labour, whereas Business farmer and Landowner farmer depend on hired labourers. These differences in terms of labor arrangements impact the *Abunu* farmer and his Net Income positively. On the other hand, the landowner farmer and the business farmer are highly dependent on hired labour. This labour force, however, is scarce in the communities under study, which result in dependency on migrant labourers and higher labour expenses.

[53] However, it is known that Hybrid cocoa perform better, only under optimal conditions and when several practices are adopted (Kolavalli and Vigneri, *s.a.)* most of the times highly intensive and input demanding.

Another factor is the land ownership and the influence on farmers' perception of long-term investments. The landowner farmer is interested in positive practical experiences before converting all his assets to certified schemes. Different farms allow farmers to minimize risk by converting first some plots; however, conversion might represent a challenge for this farmer, as they have more acreage to convert. On the other hand, migrants have other type of constraints that influence their perception about long term investments.

Furthermore, in this chapter it was shown that differences between farmers influence their realities, income and expenditures as well as their perception about ideal scenario to make cocoa farming more attractive for future generations. The landowner farmers' strategies are related to pluriactivity. As Knudsen and Fold (2011) stated, large-scale farmers transfer surplus income from cocoa production into investments in non-farm activities. On the other hand, for migrant farmers *Abunu* and Dɔ *didi* food crops are ideal as part of their traditional farming system. The need for a continuous family food supply entices farmers to invest in food production (Boateng, *et al.*, 1987).

8 DISCUSSION AND CONCLUSIONS

The process of adoption of new technologies (as we might refer to the new practices in place) is a challenge for those individuals who due to their structural condition encounter significant barriers to implement criteria and practices inherent to the certification processes. However, the agency of these individuals may bring the necessary stimulus to transform their realities to a certain extent. Akram-Lodhi and Kay (2010) stated, this capacity, and the capacity of social classes to express agency may transform and transcend structures.

The aim of this thesis was to explore the main mechanisms that shape the farming systems in the Nyinahini communities and how structural differences between farmers influence the adoption and motivation to pursue sustainable agriculture schemes. This research explored the influence of social differentiation in a context specific research, where patterns of land tenure and access to resources have been important in shaping the current situation. Empirical results aimed to answer the following questions:

What are the structural differences between the cocoa farming systems in Nyinahini?

In terms of structural differences the role of land tenure is clearly the most important because it influences the initial production capital to start cocoa production. Cocoa production systems differ by the type of farmers in the community that are involved in the production and/or management. Those who have already acquired land (mostly Akans) could start producing without being constrained by access to land while generating income. In some cases, farmers accrue both additional land and capital and may opt to further expand by employing migrant labourers. In contrast, *Abunus* and *Dɔ didi* may not possess enough capital to start cocoa business nor do they own the land, thus, they are facing additional challenges for making a living. My research is in line to a recent study of Knudsen and Fold (2011) where the size of landholdings varies considerably among farmers and land accumulation processes differ between indigenous and migrant groups.

The findings of my research demonstrated that the structural differences affect the selective use of seed sources for cocoa plantation, crop diversity, cultivation practices, capital for input procurement, labour arrangements, and land ownership. Additionally, the land tenure systems may result in distinct relations of power that affect the dynamics between individuals involved in sharecropping arrangement and the decision making autonomy of farmers.

What are the main driving forces on farmers to participate in certified cocoa production?

Several studies about motivational factors for farmers to join certification standards in different countries have been published, especially related to Organic farming (Lamine and Bellon, 2009). However, substantial literature about motivational factors to join certification standards for farmers in Ghana is not

available. Thus, comparison of the process of conversion and mechanisms influencing farmers' willingness to participate in such schemes is difficult to assess. This study aimed to give a unique inside on the process of conversion of farmers in Ghana, and elucidated the motivational factors using qualitative methods to understand from the farmers' perspective their motivation, the meaning of practices and reconstruction of conversion period by considering the structural differences among farmers and their inherent diversity.

This study showed that, contrary to what is generally expected from the introduction of new certification schemes, farmers are not primordially driven by premium prices. One of the most important mechanisms influencing migrant farmers' enthusiasm was found to be the training farmers have received. Migrant farmers depend on family labour, and therefore, the knowledge they have gained (especially migrants from the North part of Ghana whose main experience is based on annual crops) is perceived as one of the most important motivation. This demonstrates that the effort the organization is investing in training favours a more positive perception by the farmers.

In addition, in a context of inequalities, migrants' enthusiasm was found to be triggered as well by farmer to farmer interaction and the experiences (personal or external) they have had which make farmers perceive that by pursuing alternative marketing schemes (organic and RA) they will obtain higher yields and consequently more income. Those driven by this assumption are very much expecting that the efforts they invest, will in fact increase their income from cocoa production.

However, this enthusiasm will be very much related to crop performance. Thus, the use of correct management practices, and the availability of inputs are crucial for keeping farmers motivated. Currently, the inputs required for implementing proposed technical interventions may logistically not be feasible without outside interventions on a large scale since inputs are neither locally available in adequate amounts nor mechanisms are in place to make them available to individual farmers. Thus, this situation is jeopardizing successful implementation of these systems unless farmers find the way to organize themselves in a farmers' organization to develop the required support structures.

On the other hand, enthusiasm for the farming systems operated by landowners was triggered by the direct benefits. Sustainable schemes (organic and RA) and associated practices are perceived as new by the farmers; Therefore, processes of experimentation are considered to be important to determine if this will provide a viable option to them. At this stage of the project, farm experimentation and farmer to farmer interaction, are key elements for shaping farmers' perception.

It was argued in this study that the influence of other sources of income play an important role in processes of adoption. Therefore, the competition between other activities should be considered as it might influence farmers' enthusiasm and/or capacity of individuals to participate in certified cocoa production and undergo certification requirements. In addition, the different mechanisms that other

actors use in order to stimulate the motivation of farmers to follow certain trajectories are also an important point mentioned in this study.

What strategies do farmers pursue to make cocoa farming more attractive in Nyinahini and what conditions are needed when certified cocoa schemes are included?

In the transformation of agriculture and rural development one must consider farmers' perception in processes of adoption of new technologies or schemes as we refer in this study to the adoption of new certification schemes. This research showed that strategies vary considerably between views of farmers and experts. Thus, basic services seem to be relevant for farmers, whereas intensification is the strategy proposed by experts. For experts intensification is the way to achieve sustainability and comply with sustainable certification schemes. Therefore, technical interventions at the communities level aim not only on making farmers adopt sustainable schemes that can fetch higher cocoa prices (with the premium prices), but even more so by increasing production.

However, the willingness of farmers to pursue intensification is critical especially in the context of land scarcity because intensification is not a strategy to counteract land scarcity from farmers' perspective so far. Due to land scarcity, intensification may not prevail, at least not in the short-term as people are eager to work as much land as possible to secure ownership of the land for future generations. However, farmers that can incorporate the necessary agronomical practices to produce in compliance with sustainable standards (e.g. pruning, thinning, chupons removal, replacement of unproductive plants, and application of organic manure) might increase production, and thus increase their income. Nevertheless, contrary to great expectations, agricultural production cannot be viewed as outcome of purely economic decisions made by farmers in response to economic incentives (Awanyo, 2001).

Intensification implies more resources being allocated to cocoa, including labour use due to the different and more labour-demanding practices being used. Thus, this might represent a potential conflict by increased competition for labour that may also be needed for other activities farmers perform. Moreover, intensification implies having the necessary inputs to attain the expected results. Thus, either farmers or organizations supporting farmers must ensure the availability of production inputs including soil amendments and labour requirements considering the labour peaks for the scheme to be effective. However, this creates the need for a structural and logistic support network (e.g. capacity building facilities, local alternatives for inputs required, etc).

Intensity or production in the cocoa plantation is influenced by the diversification of income that many farmers pursue as a strategy to minimize risk and in order to avoid being overly dependent on cocoa farming. This in the case of *Abunu* and *Dɔ didi* is highly shaped by the role of women in agriculture as we could see these other crops are specially managed by them as they have important meaning. And in the case of landowners is shaped by the off-farm activities and other important cash crops they have.

Regarding the conditions needed, the analysis of the case studies showed that the economical performance varies according to the farm type and so do the conditions needed to make cocoa farming more attractive. Therefore, one cannot make general assumptions about specific farm size or assets farmers needs to sustain their household in the communities. It was demonstrated in this study that even though cocoa is the most important crop for farmers, some farmers do not necessarily think only about cocoa when projecting an ideal scenario for sustaining their households.

How do the structural differences between cocoa farming systems in Nyinahini interact with the implementation of sustainable certification schemes?

Structural differences interact with the adoption of certification schemes in various ways. This study showed that there are several issues considered in the process of supporting the adoption of new certification schemes in cocoa production, when one take into account the diversity among farmers and their local conditions and different realities. Firstly, due to structural differences, there might be not equal access to and control over labour and related training to perform new practices. Therefore, if training does not equally permeate the communities, some individuals may feel excluded. The training, was found to be one of the main driving forces for migrant farmers to participate in certified cocoa; therefore, if it is not received; farmers may not perceive the benefits of acquiring more knowledge, resulting perhaps in a shift of farmers' motivation towards other factors merely economic.

With the new certification schemes, the structural differences between migrant and landowners might imply diverse mechanisms to adopt certification when higher labour demand is apparent. For example, higher labour demand might imply '*Squeeze*' of labour force to comply with the new requirements in the case of *Abunu* and *Dɔ didi* farmer and difficulties of acquiring labourers in the case of landowners (interested in pursuing certification). This poses a serious constraint when converting to organic production. We cannot conclude at this stage of the project that higher labour demand disables the adoption of certification schemes. Indeed, it was shown that all type of farmers; those who can pay for labourers and those who use family labour were found to be motivated and participating in certified cocoa production. However, this situation may vary with time, as individuals may have wider space to analyze their labour investments and their profits from the new schemes in place.

The structural differences between farmers were found to influence the importance of other sources of income, as for migrants the food crops and for landowners highly valued products and off-farm activities were important. In the context of new opportunities with certification, it might be possible that landowners find more *room for manoeuvre* to wait for economic returns from their investments in certification schemes, as more assets (e.g. capital, labour) appear to facilitate the implementation of new practices. Thus, well-endowed farmers appear to pursue a technology more intensive in the use of hired labour power (Trang, 2010). However, in some aspects having more assets imply certain constraints, as it was shown with the requirement of RA for landowners to declare all their lands. In this sense,

certification becomes a challenge for landowners, as they have to decide whether converting all of the different farms they have and not gradually as farmers normally prefer to do, because they want to experiment and test if the new model in place satisfies their necessities.

However, in a perspective of long term investments, such as the scenario of Rainforest and agroforestry systems, the possibility of thinking about such investments might be more prompt to implement by landowners interested in adopting Organic/RA certification. Important reasons include firstly, the availability of different farms, which influence to a certain extent the greater *room for manoeuvre*. This implies that the landowner may avoid burning the land, cutting down trees and think about using shade trees in one farm whereas for *Abunu* and *Dɔ didi* migrants it might be different due to the necessity they have to grow food crops for their survival. Secondly, long-term investment is more prompt to be thought by landowners because they have ownership of the land; thus they have both the financial resources and the capacity to wait for economic returns.

Another important element of the analysis of structural differences and adoption of certification is the decision making process, which is an issue for migrant farmers because in many occasions they do not have autonomy to decide about the management of the farms due to their social structure. On the other hand, even if individuals make decisions about the land management, as it is the case of landowners, sometimes they do not have the possibility to supervise the implementation of the practices required by the standards. Thus, improved communication between individuals involved in such labour arrangements is important to ensure successful adoption of new schemes such as certification, especially communication about the benefits of agroforestry systems.

It can be concluded that the differences between farmers influence to a certain extent the adoption of new certification standards and as it was demonstrated in this study, the differences are rooted in social differentiation. The social inequalities that started since the beginning of the cocoa production in Ghana are still influencing to a certain degree the development of the communities and the inclusion of farmers with less assets for farming and less autonomy to freely decide upon land management. However, further research have to be done in order to investigate how the differentiation processes remain as a influencing factor on the inclusion of farmers in new ways of production such as certification schemes; especially when farmers have to assume all the certification costs. This is important, because certification costs are often too high and investments too risky for smallholders with less assets and means to assume this costs (Kleemann, 2011) and most of the times, conversion; specially, to organic farming, might imply a complex system change, lower profitability and high risks (Padel, 2001).

9 THEORETICAL EPILOGUE

This thesis has explored the theory of social differentiation in a context of intervention for supporting small farmers in Ghana during conversion towards sustainable standards. The theory of social differentiation was shown to be crucial for analysing the structural differences between farmers and to assess their influence during adoption of sustainable schemes. Social differentiation provides a conceptual framework for mapping the trajectories farmers may follow in a context-specific study.

The Structural-Historical approach appears to be very suitable for depicting the communities' realities and their inherent diversity. However, the complexity of human beings as active agents makes it challenging to have it framed by one single theory. Structures are both reproduced and transformed by the agency of individuals or groups to cope to rapidly changing conditions. Individuals struggle to sustain their livelihood but some might experience more difficulties than others to do so. Enthusiasm of individuals plays an important role when pursuing their aspirations.

Technography appeared to be an important element for this study, as realities are complex and cannot be generalized. Thus, this study provided a context-dependent exploration and resulted in improved assessment of underlying mechanisms. The reported findings should not be considered as static, because especially farmers' motivation and emotions are always evolving and may change as the context changes as well. However, as this study demonstrate the context of social differentiation created space for specific mechanisms of differentiation that are materialized and influence the adoption of new technologies and new ways or ordering production.

Development interventions often refer to poor farmers. However, implicit assumptions about homogeneity may affect these interventions, as farmers' communities are enriched by diversity. Social differentiation in the context of Ghana explains how structural differences between farmers may affect the adoption of certification standards and suggest that further research should be carried out to follow up motivations over time. The study of an intervention being adopted only for a short period of time, should be expanded to investigate farmers' motivations after implementation have been carried out for longer periods of time.

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APPENDIX A.

Table A1. Family labour *Abunu* farmer

	Hours invested	
Family labour	**Cocoa**	**Food crops**
Clearing land (7 d*8h)	56	56
Chopping trees (3d*8h)	24	24
Weeding (3d*8h*5)	120	
Planting (3d*8h*2per)	48	
Another clearing	56	56
Harvesting (3d*8h)	24	
Gathering pods (3d*8h)	24	
Breaking pods (1d*8h*7 per)	56	
Preparation food Braking pod (4h)	4	
Carrying pods to fermentation place (1h)	1	
Drying cocoa (6d*8h)	48	
Maintenance of vegetable production (1 week)		56
Maintenance of plantain and cassava (1h/week)		48
Weeding food crop plots (1h * 4 times)		4
Collect black pods (3h. 3 times)	9	
Pruning (4 d*1)	32	
Removing chupons (1 d*2)	16	
Harvesting (1 d)	8	
Total	**526**	**244**
Labour cost (3.7 GH₵ /8h)	**245**	**114**

Table A2. Contract labour Business farmer
Annual costs of labour for 1 acre of cocoa

Labour activity	*GHC*
Clearing (20 days)	100
Filling	50
Leveling land (10 days)	37
Filling trees (contract)	50
Fire belt (5 days)	19
Burning weeds (4days)	15
Collection of debris (contract)	120
1st. weeding (contract)	40
2nd. weeding (contract)	40
3th weeding (contract)	40
4th weeding (contract)	45
Pest and disease control	500
Total	**1056**

Table A3: Family labour Caretaker/*Dɔ didi*

Family labour	*Dodidi*		*Cocoa*	
		hours		hours
Clearing land	2 wks*3times	240		
Chopping trees	2 wks*3times	240		
Weeding	2 wks*3times	240	15 day*3times	360
Planting	1 month	160		
Harvesting	1day every 2wks	192	2 wks	80
Gathering pods			3 days	24
Breaking pods				8
Preparation food Braking pod			2 hrs	2
Transporting cocoa to dryers			1 day	8
Carrying pods to fermentation place			1 day	8
Drying cocoa			7 days	56
Vegetable production	4 hr* 4 times	16		
Replanting			1 day	8
Collecting black pods			5 h* 2times	10
Pruning			3 wks *1time	120
Removing chupons			when weeding	
Spraying			3 day * 3times	72
TOTAL		**1088**		**756**
Assuming labour cost (3.7 GH₵ /8h)		**503**		**350**

APPENDIX B.

Table B1. *Abunu* farmer

Indicator			GH₵
	cocoa	16 bag/year*200 GH₵	3200
	plantain	10 branches/week*26 w*2 GH₵	520
Revenue	mayze	3 bags/year*30 GH₵	90
Total revenue			3810
Costs		Akuaraname (insectice for stored mayze)	5
		Chicken manure (6 bags/acre)*5 GH₵	180
		Transportation cocoa	100
		Transportation plantain	72
		Nnoboa participation (2GH₵ *3times)	6
		Plantain suckers (500 suckers* 5 pescuas)	25
Input costs			388
Contract work		Harvesting mayze (3 laborers*3.7GH₵)	11
		sprayer 15 lt*80 pescuas	12
Total costs			**411**
Gross income			**3399**
Amortization	Chissel	1 und*5 GH₵/3 yrs	2
	Hoe	1 und* 7GH₵ /3 yrs	2
	Cutlass	1 und*5 GH₵/1 yrs	5
Total Amortization			9
Adjusted gross income			3390
Net Income			**3390**
Net income/acre			547
Family labour (hours)			770
Family labour (costs)		Hours/8* 3.7GH₵	356

Table B2. Business farmer

Indicator		GH₵
Revenue	*10 bags/ acre * 200 GH₵*	*8000*
	Plantain	*520*
Total Revenue		*8520*
Costs	*Insecticide*	
	1st Spray (Jun) 150ml Confidor * 15GH₵	9
	2nd Spray (Jul) 150 ml Confidor	9
	3th Spray (Aug) 150 ml Confidor	9
	4th Spray (Sep) 150 ml Confidor	9
	5th Spray (Oct) 150 ml Confidor	9
	Fertilizer	
	3 bags cocofeed (Apr) * 20 GH₵	240
	3 bags cocofeed (Aug) *20 GH₵	240
	Fungicide	
	1st Spray (6 sachers) Funguran-OH *5GH₵	120
	2st Spray (6 sachers) Funguran-OH	120
	3th Spray (6 sachers) Ridomil *5GH₵	120
	4th Spray (6 sachers) Ridomil	120
	Plantain suckers (500 suckers* 5 pescuas)	100
	Cocoa seedlings (500 *10 pescuas)	200
Total costs		1305
Contract work		4223
Total costs		5528
Gross Income (GI)		*2992*
Amortization	Chissel (5 und* 5 GH₵ /2 yr)	12.5
	Hoe (5 und * 5 GH₵ / 2 yr)	12.5
	Cutlass (5 und * 5 GH₵ /1yr)	25
	Backpack sprayer (1 und *300 GH₵/5 yr)	60
Total Amortization		110
Adjusted Gross income		2882
Net income (NI)		*2882*
Net Income/ acre		*720*

Table B3. Landowner farmer

Indicator		Description	GH₵
	Cocoa	3 bag/acre*200 GH₵	4200
	Plantain	20 sucket/2week*2 GH₵	1040
Revenue	Rice	12 bags * 30 GH₵	360
Total revenue			*5600*
Costs		Fertilizer (Cocoafeed)*3bags/acre*20 GH₵	420
		Hibrid trees (400/acre*20 pescuas)	560
		Plantain suckers (500 suckers* 5 pescuas)	25
		Funguran and Ridomil (20 sachets/2acres) *3 times/yr	0
		Confidor (30ml/tank/acre)*15 GH₵ * 3 times/year	9
		Transportation plantain to market	78
input costs			1092
Contract work		3 laborers (harvesting cocoa *3.7 GH₵)*3 times	33
Total costs			1126
Gross Income			*4474*
Amortization	Cutlass	2 und*5 GH₵ /1 yrs	3
	Backpack sprayer	1 und*300 GH₵ /5 yrs	60
Total amortization			63
Adjusted gross income			*4412*
	Labour	2 laborers (250 GH₵ /each)	500
Net income			*3912*
Net income/ acre			*391*

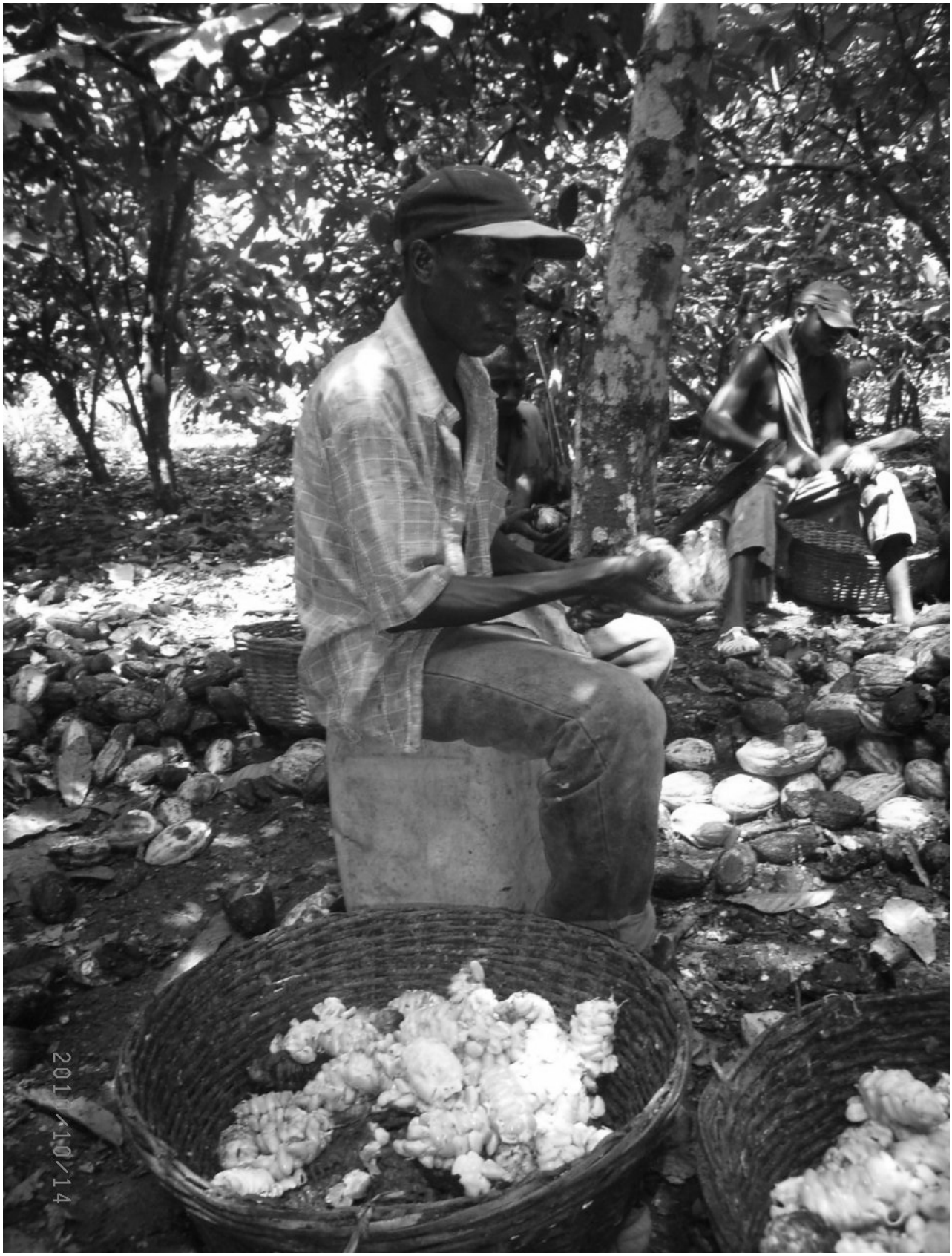
Table B4. Caretaker/ *Do didi*

Indicator			GH₵
	Cocoa	40 bags (1/4)*200 GH₵	2000.0
	Plantain	15 suckets/2week*26 w*2 GH₵	780
Revenue	Maiz	1 bag/year*10 GH₵	10
Total revenue			*2790*
Costs		Atrazine (6 lts)*10 GH₵ for Dodidie plot	60
		Plantain suckers (500 suckers* 8 pescuas)	40
		Mayze seed (3 Kg*3 GH₵)	9
		Transportation plantain to market	78
		Chicken manure (6 bags/acre)*5 GH₵	195
		Nnoboa participation (2 GH₵ *5 times)	10
Total costs			187
Gross income			*2603*
Amortization	Cutlass	2 und*5 GH₵/1 yrs	3
	Backpack sprayer	1 und*250 GH₵ /10 yrs	25
	Hoe	2 und*5 GH₵ /3 yrs	1
Total amortization			28
Adjusted Gross Income			*2575*
Net Income			*2575*
Net Income/ acre			*399*
Family labour (hours)			1844
Family labour (costs)		Hours/8 * 3.7 GH₵	853

Picture. C-1: This picture represents an Akan landowner who manages the land in an old traditional way. Living in the village represents serenity and tranquillity.

Picture. C-2: This picture depicts a landowner Akan woman, that produces cocoa and trade plantain in the Bibiani market. Her house represents her investments (cement, tin roof, etc.) and a symbol of better status.

Picture. C-3: This picture represents the *Abunu* farmers, who are observed with these baskets after coming from the farm. They carry the foodstuffs for personal consumption. Just before the Bibiani market's day, the baskets are fully loaded mainly with plantain and cassava.



Picture. C-4: This picture represents the caretaker/*Dɔ didi* farmers. The breaking pods are performed with a social ritual called '*nnoboa'*, where all men gather together to break the pods, accompanied in some occasions by drinks.