

Fruit Crop theft and its impacts on the productivity of oil palm agro-industries in Cameroon

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Abstract

Plantation agriculture and especially oil palm requires vast areas of land for their establishment. Rural livelihoods and neighboring agro industries may compete for the same available natural resources such as fertile land and water. This study was designed to assess the impact of indigenous livelihoods on the productivity of neighboring agro-industrial plantations. A total of 250 households located in settlements close to plantations were surveyed in 5 regencies of Cameroon. Farming was the principal occupation for 86% of the family heads with an average farm size of 2.22 hectares. Companies incurred an average loss in annual oil palm Fresh Fruit Bunches (FFB) production in the range of 20.67% and 77.44%. A strong positive correlation ($R=0.644$) was observed between production loss and total population of the settlements surrounding the plantation. In like manner, a strong negative correlation ($R=-0.966$) was observed between plantations' production loss and the distance from indigenous settlements. There was a strong relationship between socio economic shocks on the local populations and the amount of security stationed in oil palm plantations. Fruit theft might have caused annual FFB loss of 36% - 45% on neighboring agro industrial plantations. It would be preferable for oil palm companies investing in rural proximities to implement strategies that can empower local communities to become economically independent.

Keywords: Praedial larceny, rural livelihoods, sustainability, plantation security, oil palm development.

1. Introduction

Oil palm production is very important in the economic life of its producer countries with a high output multiplier effect of 2.79, an employment multiplier effect of 1.05 and an income multiplier effect of 2.50. Oil palm production benefits downstream sectors such as the chemical industry, food industry and the commercial sector (Norrochmat & Hadianto, 2010). The oil palm sector employs more than 4.5 million people in Indonesia and about 30.000 people in Cameroon. Net export revenue for Indonesia is evaluated at 19.1 billion USD and 18.0 Billion USD for Malaysia.

Although oil palm is an important economic crop, problems associated with its cultivation are many. These problems vary from agronomic, environmental and social issues. Investors in plantation agriculture seek for vast areas of good soils, appropriate climatic conditions, water resources and adequate manpower. Oil palm, is planted at a density of only 143 trees per hectare and since it is an industrial crop, each plantation would need between 4000 and 6000 hectares (ha) to benefit from economies of scale. In most cases, rural settlements are relocated to the external limits of plantations because the livelihoods of rural peoples and agro industries depend on same natural resources. In a situation where 3 out of 4 persons in developing countries live in the rural areas with 80% of them depending on agriculture for their livelihoods IFAD (2010), agro industrial plantation presence may contribute to the impoverishment of local people if regulations are not well designed and respected (York et al. 2003).

1.1 Oil palm agro industrial plantations in Cameroon

Oil palm had been used as food in the Gulf of Guinea even before the establishment of the first Industrial plantations. The Germans in Cameroon had identified an exceptionally thin-shelled palm fruit with high oil content as early as 1902 (Hartley, 1988). In 1946, the Governor of British Cameroons signed an ordinance creating what is now known as the Cameroon Development Corporation. Similar companies such as PAMOL, SPOA, and SOCAPALM were also created in other parts of Cameroon before and immediately after the 1960 independence. After 1960, all the major companies became publicly owned and were given public subventions and incentives for further plantation development. Some of the companies were privatized in the early 1990 in

accordance with the Structural Adjustment Program of the International Monetary Fund (IMF).

Oil palm plantations in Cameroon were first created around the foot of the Mount Cameroon so that they can exploit the surrounding rich volcanic soils and heavy rains.

1.2 Socio economic shocks in rural neighborhoods of plantations

The population of Cameroonian towns and villages in the pre independence era (before 1960) was very small and the use of vast areas of lands for plantations was not much an issue. Subsistence agriculture, gathering and traditional fishing were the major economic activities of these people. In 1976, the population of Cameroon was 7.66 million with the South West Region having a population density of 24.9 per Km² (Wyrley-Birch et al. 1981). About half of the population at this time was below 15 years. The population of Cameroon increased two and a half times between 1980 and 2010 (UNDESA, 2013) without a corresponding increase in wealth. The level of poverty especially in the rural areas increased to 75% (MINADER, 2011).

After the global economic depression of 1987/1988, the government of Cameroon signed the Structural Adjustment Program (SAP) at the International Monetary Fund (IMF) with the aim of halting subventions to state owned companies and to privatize companies that were not giving positive returns. The government of Cameroon was therefore obliged to end the FONADER Project. At this same period, the Cameroon government retrenched the size of its public service sending thousands of family heads on redundancy. The new owners of the privatized agro industrial plantations also reduced the size of their workforce for efficiency and profit maximization. In 1993, the CFA currency was devalued and there was a fall in the export price of the major economic crops such as cocoa and coffee. Life became difficult and many people returned to the villages, where most of the fertile land had already been taken up for plantation agriculture by agro industries. Thus, the rural settlements were being exploded with more unemployed individuals.

1.3 On farm crop theft or praedial larceny

The Food and Agricultural Organisation (FAO) defines praedial larceny as the theft of agricultural produce. According to the FAO, several factors encourage the growing spread of praedial larceny. Vulnerable and poor households directly consume 35% of produce stolen in the Caribbean (FAO, 2013). The imbalance in the daily demand and supply of fresh foods makes the buyer to have little or no interest in the legitimacy of the food source. Praedial larceny has been said to negatively impact the development of agriculture affecting 98% of farmers in the Caribbean States (FAO, 2013). The consequences of Praedial Larceny are not limited to agricultural produce loss alone because thieves often attack farmers that in some cases may lead to death. Asogwa and Okwoche (2012), reported that market centralization can reduce crop theft in rural settlements. The FAO (2013) recommends that programs for alternative livelihoods, public education, communication and good legislation can reduce praedial larceny.

1.4 Hypothesis

Although the oil palm plantations in Cameroon are established on the best soils, with adequate annual rainfall of more than 2500 mm, using improved seed quality and annual fertilizer recommendations, productivity (1.2 tons CPO/ha/yr) still remains low, (MINADER, 2011; Hoyle & Levang, 2012) when compared to 4.5 tons/ha/yr for South East Asian countries (Info sawit, 2010). It would be interesting to investigate the reasons for this contradictory performance of the Cameroonian oil palm industry. This aspect motivated the present study, which investigated the relationship between the productivity of oil palm companies, and factors that are not directly linked to oil palm production such as the livelihoods of villagers surrounding the plantations and also support to local smallholder farmers.

The purpose of this study was to explore the productivity of oil palm agro industrial plantations located at the thresholds of rural settlements.

Specifically it was to 1) Draw a relationship between increased shock levels in the rural communities located close to oil palm industrial plantations against the plantations' productivity.

2. Research method

2.1 Study area

The study was carried out in 5 regencies of Cameroon namely the Fako, Mungo, Sanaga Maritime, Ocean and Nyong and Kelle. Samples of 50 households were interviewed per regency giving a total of 250 households for the 5 regencies.

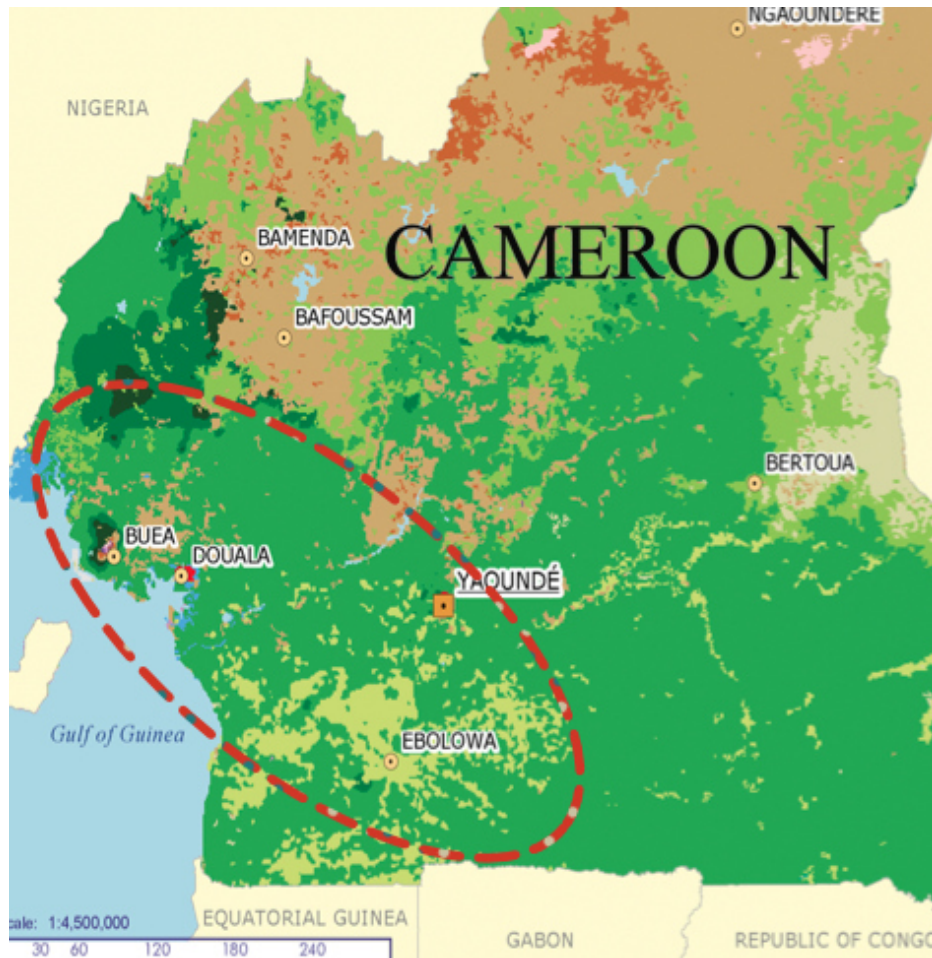


Figure 1. Map of Cameroon showing the study area bounded in red broken lines

The sample included youths, women and men in all the villages. The design permitted purposive sampling and the use of questionnaires.

Secondary data was obtained from company archives, especially on the aspects related to history of plantation and yields. Population census data and the shocks faced by rural populations located at the peripheries of agro industrial plantations were obtained from the 2010 results of Cameroon National Population Census. Production data was collected from companies and analyzed to obtain actual production in order to compare with expected yields. Information on age of plantations and quality of seeds were obtained from company archives and were used to calculate expected yields. Rainfall data was obtained from each estate's meteorological office. Soil data was obtained from the Institute of Agricultural Research for Development (IRAD) Cameroon. Cutting transversally oil palm fruits and measuring its shell thickness was used to determine seed quality. Fertilizer doses applied by oil palm plantations in the areas studied were obtained from the estate offices and later confirmed at the National Centre for Oil palm Research (CEREPAH) Cameroon. This study was unable to give a weight index on some other management related factors that could also have influence productivity.

Analysis of data was carried out using the SPSS statistical software. The T- test was used to compare difference in yields between the actual and expected yields at a confidence interval of 95%. Descriptive statistics were carried out on some variables to appraise the levels of the different categories. Crop yield loss was measured as the difference between actual production and potential production of the plantations. Correlation studies were carried out to assess the relationship between the population size of the surrounding indigenous settlements and the yield loss of neighboring plantations. A similar measure was done between crop yield loss and the distance of indigenous settlements from plantations.

3. Results

3.1 Socio economic parameters of respondents

Table 1 represents a description of population structure and the main activities of the households in the

communities. It was observed that 90% of the family heads were male while 10% were female. The minimum age for a family head was 26 years and the mean age of respondents was 47 years. Farming was the major economic activity with 86% of the households involved in agriculture while 4% earned their living through trading. Public servants could also be found in these communities especially teachers and medical personnel who make up 10% of the family heads. Agricultural activity was both for subsistence and for income generation. Income from the sale of farm produce contributed to 77% of total household income.

Table 1. Summary of the composition and income generating activities of respondents

Var.	Sex (%)		Age distribution (Yr)			Main economic activity (%)			Income (%)
Cat.	Male	Female	Min	Mean	Max	Farming	Trading	P. S	Mean
	90	10	26	47	75	86	4	10	77

P.S = Public servant, Cat = categories, Var. = variables.

3.2 FFB production in companies' plantations

Table 2 provides FFB yield and production data in 4 plantations (A, B, C, D). Comparison between the plantations was based on the yield in tons per hectare per year rather than on total annual production because all the plantations do not have the same surface area. Plantation A has the largest planted area while plantation B has the smallest planted area (260 Ha). Plantation A has the highest total annual production (5681 tons) probably because it has the largest planted area. In contrast, plantation B has the second highest total annual production (3713 tons) and it is also the highest yielding plantation (14.28 t/ha/yr).

Table 2. Companies' loss from estimated and harvested annual FFB yield

<u>Plantation</u>	<u>Ha</u>	<u>Total annual production</u>			
		<u>Harvested</u>	<u>Estimated</u>	<u>Yield (t/ha/yr)</u>	<u>Loss (%)</u>
A	418	5681	7524	13.59	24.50
B	260	3713	4680	14.28	20.67
C	336	2631	6048	7.83	56.50
D	401	1628	7218	4.06	77.44
Total	1415	13653	25470	9.64	46.40

From the table, it can be observed that plantation 4 has the highest percentage loss (77.44%) in FFB while plantation 2 records the lowest percentage loss (20.67%). Plantation 4 has the highest percentage loss in FFB production. A strong negative correlation coefficient ($R = -0.966$) was observed between the plantations' production loss and the distance of local settlements from the plantation while a relatively strong, positive relationship ($R = 0.644$) was observed between production loss and total population of the settlements surrounding the plantation.

From the semi structural interviews administered to companies' staff, it resulted that some problems were also responsible for the loss of production in the plantations. These problems included crop evacuation, crop mixture, less amount of input and fruit theft. Fruit theft was a major cause for the fall in annual production and productivity as mentioned by management staff from all of the companies visited. It should be emphasized that companies' production is calculated at the entrance of the palm oil mill using a weighbridge and not inside the farm.

3.3 FFB theft in oil palm plantations

From the interviews conducted during this study, it was understood that theft was a serious problem in the plantations. Several locals were serving jail terms resulting from oil palm theft. There was a massive presence of the national military in the plantations during this study. Estate officials complained of an increasing wave of fruit theft in the plantations. They also enumerated a list of unsuccessful security measures employed to curb FFB theft. It is estimated that theft in oil palm plantations may be responsible for FFB loss of between 36% and

45%. Management staff listed some major consequences of oil palm fruit theft on company's plantations that include;

3.4 Abandoned plantations

Whole estates of 8000 ha in the Centre region specifically in the Division of Nyong et Kelle were abandoned because of the inability to stop fruit theft in those plantations from neighboring communities. Before the companies could start reconvert these plantations to other crops, the palms had been abandoned for many years. This was because companies could not be buying inputs and paying for plantation maintenance while they were unable to collect the crop production. Another reason was that company personnel became '*persona non grata*' in their own plantations because thieves moved in gangs and would threaten the lives of workers in these plantations. Apart from the fact that production in these plantations fell to unbearable minimum, company's security men were also under threat from FFB thieves.

3.5 Plantation reconversion

The most recent option has been the reconversion of oil palm plantations closer to rural settlements into less vulnerable crops that do not have an immediate economic value in the local market. These crops include rubber and banana that are barely raw materials for export. Local indigenes would not steal rubber because they cannot consume it directly nor can they sell it in the local markets. Both rubber and banana have little far lesser economic value for the local indigene. In the South West region alone, a total of 5000 hectare of oil palm plantation has recently been converted to banana cultivation as can be seen in the picture below. In this picture, trunks of oil palm that had been felled and gathered in heaps to give way for the planting of banana. Figure 2 presents a plantation situated close to indigenous settlements and the provincial highway road. This plantation has been reconverted from oil palm to banana plantation because of increase theft pressure.

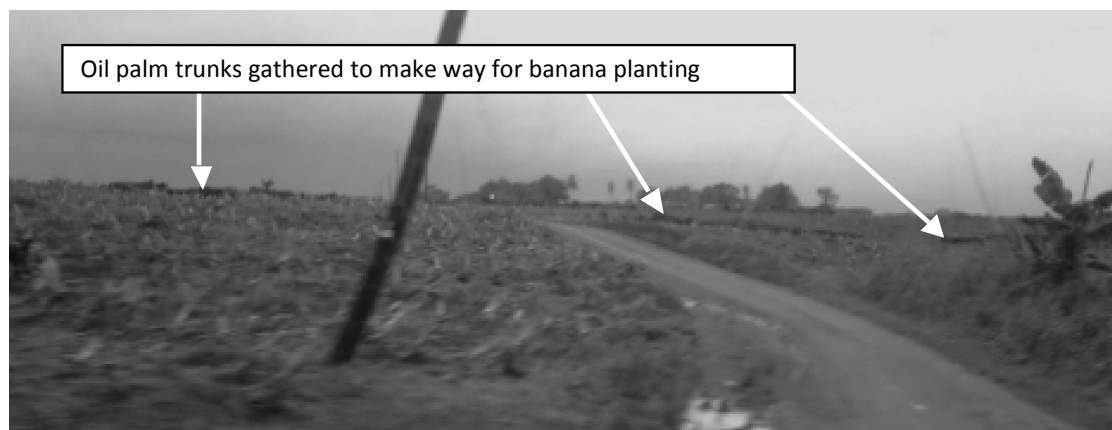


Figure 2 Conversion of oil palm plantation into banana plantation in the South West Region of Cameroon (photo by author)

The plantation in Figure 2 is one of the first plantations that were constantly visited by thieves during the early 1990s. At that time, the plantation was old and was being considered for regeneration. Counting on the newly created security department, the plantation was replanted in the mid 1990s. The plantation was barely at the middle of its life span when it was abandoned and then reconverted in 2011. At this age of sixteen years, the plantation was supposed to be at its peak of production.

4. Discussions

In the Cameroonian context, the morose economic situation of neighbouring communities might have led to their dependency on oil palm fruit theft from companies' plantations as a source of living, thus causing a drop in companies' plantation productivity to 1.2 tons CPO/ha/year as reported by Hoyle & Levang (2012).

4.1 Repercussions on the companies' oil palm plantations

Fruit theft is a relatively new problem in Cameroonian oil palm plantations. It is true that some isolated cases

had been recorded in the early 1990s on plantations close to rural settlements. In those years, these plantations consistently recorded approximately 22 t/ha of FFB per year, far higher than the 9.64 t/ha of FFB obtained today. In present times, production was supposed to be increasing because of the modernization of production techniques and the effort of breeding of new high yielding varieties. It should be noted that these companies buy the best quality seeds from the research centers and also receive soil evaluation experts every year who give them fertilizer recommendations along with best management practices. These plantations are also located in an area made up of rich volcanic soils with an annual rainfall of 8000 mm distributed in at least 8 months in the year. The rate of fruit theft has been increasing in alarming rates and our estimated annual loss of between 36% and 45% is coherent with those reported (30%) by an oil palm agro industrial top management to the Le Messenger newspaper of Cameroon on the 26th of November 2012. The existence of FFB theft could be measured from the series of ever improving but failing sequential actions taken by Cameroonian agro industries to curb this phenomenon. From table 2, it is observed that plantations 3 and 4 have the highest amount of loss recorded. These sections are surrounded by relatively populated indigenous rural settlements. Plantation 4 is bordered by 2 native villages in its West and East boundaries and is located at the western limit of the estate. Plantation 2 is inhabited in majority by government military forces whose presence scare thieves from fruit theft activities. Plantation 3 that records the second highest percentage loss in FFB (56.50%) is located close to the largest settlement of local people. These villages usually have high rates of unemployment with no serious economic activities. A very strong negative relationship ($R = -9.66$) was observed between production loss and the distance of native settlements from oil palm plantation. This relationship explains that plantations closer to native settlements suffered the highest loss in oil palm production. This is consistent with reports from Borneo in Malaysia indicating that local people, who claimed native customary rights on part of plantation land, deemed it their right to illegally harvest FFB in neighboring plantations leading to a loss of over \$10,319,760 (Borneo Post, August 5 2011). The government of Cameroon also developed a policy to retrocede part of the plantation lands to the indigenes for rural settlement. Part of this resettled population make their living out of fruit theft since they are located inside or at the threshold of producing farms. There exists a relatively strong correlation ($R = 0.644$) between population size of these settlements and total loss in production. These two parameters strongly give us reason to affirm that the recent drastic drop in productivity of Cameroon's oil palm plantations is linked to FFB theft. Results from this study show that the majority of these indigenes carry out farming as principal activity for their livelihoods (86.0%) and since most of the fertile land of these local people had been taken up for plantation agriculture (Tande, 2006). These people now have only the nearby companies' oil palm plantations as a source of income diversification (Ellis, 2000) and as a source of livelihood adaptation in order to reduce vulnerability and poverty (Davies and Hossain, 1997).

Cameroon national production of palm oil is 220 000 tons of oil. In the absence of FFB theft, the annual production would have been 330 000 tons and the productivity would have risen to about 2 tons CPO/ha/yr. At the current price of \$2 per kilogram of oil palm, the annual loss incurred by Cameroonian oil palm companies as a result of fruit theft is \$220 million. Fruit theft is a relatively new phenomenon in Cameroonian oil palm plantations. It is true that some isolated cases had been recorded in the early 1990s along plantations close to native settlement.

It was with relative ease that land was obtained for plantation development in the early 20th Century by the German and British plantation owners. The population at that time was less than 7 million inhabitants and most of them lived on gathering and hunting rather than farming. After World War II, these plantations became state owned, partly funding the government. Figure 3 gives a timeline of measures undertaken by Cameroonian agro industries to secure companies' resources and harvests from thieves. These measures coincide with different shocks suffered by the society in general, with greater impact on rural populations. Security in oil palm agro industrial plantations was not an issue before 1988. Between 1988 and 1990, workers on convalescence would serve as night watchmen on company's heavy equipment and staff residence, and only on few occasions. Companies resorted to the recruitment of more professional security guards between 1990 and 1992 who were positioned in the oil palm mills to watch over palm oil storage tanks. A few cases of crop theft were recorded between 1990 and 1992 and this forced companies to institute farm gate security guards who would check all incoming and outgoing trucks on the plantations. Between 1995 and 1998, companies had created specialized security departments where they trained their own security staff. These trained security guards were manned 24/7 on farm gates with a mobile team going round the plantations especially on plots that had mature crop. Companies' security was complemented with private security firms between 1998 and 2000. It has been observed since 2008 that men in Cameroonian military uniforms are permanently patrolling the oil palm plantations in Cameroon. There are claims that the increasing security is not unconnected to the increasing theft on these plantations because both theft and level of security were increasing proportionally.

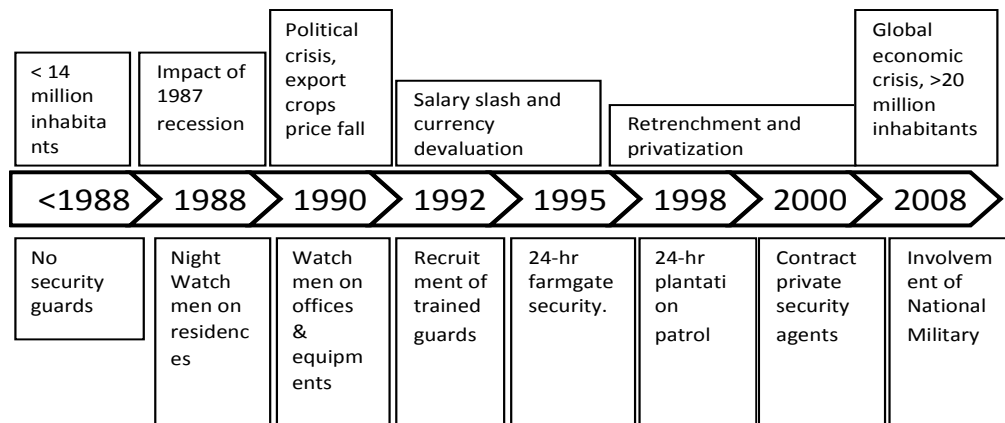


Figure 3 Timeline of shocks on communities versus security measures in oil palm plantations

The middle section represents the timeline between 1988 and 2008 while above section represents the socio economic shocks experienced by the population, the below section represents the level of security stationed in the plantations.

There has been a drastic drop in national oil palm productivity recently in Cameroon This has led to a constant deficit in supply which has given way for imports (60 000 tons for 2016) thereby increasing market price for palm oil and its derivatives. The price of a liter of oil palm in the local market has increased by 100%.

Agricultural science and technology have improved and oil palm techniques are becoming more and more modern and efficient. Best management practices and high yielding seeds are available with potential yields of 32 tons of FFB/ha/year. It should be noted that these companies buy the best quality seeds from the research centers and also receive soil evaluation experts every year who give them fertilizer recommendations along with best management practices. These plantations are located in an area made up of rich volcanic soils with an annual rainfall of 8000 mm distributed in at least 8 months in the year and there is no reason for production to have fallen as low as 9.64 tons FFB/ha.

Gillespie (2012) reported that plantations that fail to move beyond “legalism” in their relationships with local communities will continuously need to grapple with the resulting tensions generated by the local peoples’ endemic feelings of injustice towards the plantations’ distribution of benefits. Walhi (2012) argues that support activities on local communities are just a means by companies to protect their business operations from any riots and destructive actions from these local populations. As far back as 1981, Wyrley-Birch et al. (1981) noted that there was an equivalent increase in both urban and rural immigration into regions with agro industries in Cameroon. They advised that it was imperative for the authorities to provide social facilities in these rural areas to accommodate the increasing influx of people. In this era of freedom and democracy, local communities are benefitting from rights inscribed under national and international law. This explains the conclusions of Sayer et al. (2012), which say that good governance oil palm cultivation can bring valuable contributions to development.

5. Conclusion and recommendations

This study has investigated the relationship between the productivity of oil palm plantations and the socio economic situation of its neighboring communities.

Recently, Africa especially Cameroon has seen the influx of major oil palm companies wanting to invest in oil palm plantations. Going by the results of this study, these companies should understand that they would need to take the indigenous local populations as important stakeholders in the development and sustainability of their company. The abandoning of plantations closed to indigenous settlements and the reconversion of productive oil palm plantations to less vulnerable crops like rubber and banana has led to a continuous drop in Cameroon palm oil production. Apart from fruit theft that is softer but yet condemnable, there have been widespread riots and killings of company staff, burning down of offices and destruction of plantations by indigenes seeking justice in their own way. Therefore, this study recommends that;

1. Investors should reserve farmland for the local population so that they can cultivate crops for both subsistence and for the local market.
2. The creation and financing of schools including the award of scholarships to local youths and the possible recruitment into the company could increase the socio economic status of many family heads. There is a sense of ownership that develops in families whose relatives work in these companies and this can lead to some sympathy especially in protecting companies' assets. Family members of employees seek to preserve the well being of the company rather than being frustrated because none of the kinfolks hold a staff position in the company.

References

- Asogwe, BC., & Okwoche, VA. (2012), Marketing of agricultural produce among rural farm households in Nigeria: The case of sorghum marketing in Benue State. *International Journal of Business and Social Science*, 3(13) 269 – 277.
- Borneo Post., 2011/08/05. Illegal harvests plague plantations. <http://www.theborneopost.com/2011/08/05/>
- Le Messenger, 26 November 2012. Huile de palme : le vol, un phenomene aggravant le deficit nationale.
- Colchester, M., & Chao, S. (2013). Conflict or consent? The oil palm sector at crossroads. FPP, Sawitwatch and TUK Indonesia.
- Davies, S., & Hossain, N. (1997). Livelihood adaptation, public action and civil society: A review of the literature IDS working paper No. 57 Brighton: Institute of Development Studies.
- Ellis, F. (2000). "A framework for livelihood analysis" In *Rural livelihoods and diversity in developing countries*. Oxford: Oxford University Press.
- FAO. (2013). An analysis of the state of praedial larceny in member states of CARICOM. FAO Sub Regional Office for the Caribbean.
- Gillespie, P. (2012). The challenges of corporate governance in Indonesian oil palm: Opportunities to move beyond legalism? *Asian Studies Review*, 36:2, 247-269.
- Hartley, C. W. S. (1988). *The oil palm*. 2. London: Longman.
- Hoyle, D., & Levang, P. (2012). *Oil palm Development in Cameroon*.
- IFAD. (2010). Rural poverty report. <http://www.ifad.org/rpr2011/report/>
- Info sawit. (2010). Menggenjot produktivitas sawit. *In Indonesian Industrial Crops magazine*, vol 4 No.3.
- MNADER. (2011). Annual statistic report.
- Norrochmat, D.R., & Hadianto. A. (2010). Masa depan industri kelapa sawit dalam tinjauan ekonomi politik dan perubahan iklim dunia: Mitos dan fakta. Seminar sehari perubahan iklim dan masa depan pertanian Indonesia, Jakarta.
- Sayer, J., Ghazoul, J., Nelson, P., & Boedhihartono, A.K. (2012). Oil palm expansions transform tropical landscapes and livelihoods. *Global Food Security*. Doi/10.1016/j.gfs.
- Tande, D. (2006). A brief history of the Bakweri Land Problem. <http://www.blccarchives.org>
- UNDESA. (2013). *World population prospects : The 2012 Revision*. DVD Edition.
- Waddock, S. A., & Graves, B. 1997. The corporate social performance – financial performance link. *Strategic Management Journal*, 18 (4): 303 – 319.
- Walhi., 2012. A study of corporate social responsibility practices in four natural resource extracting companies in Indonesia. <http://www.walhi.or.id>
- Wyrley-Birch EA., Anderson IP, Cox JR, Errington M, Walker SH (1981). Land suitability and feasibility study for the establishment of oil palm and rubber plantations in the South West of Cameroon. Project Report, Land Resources Development Centre, UK Ministry of Overseas Development, no. 102. 123 p.
- York, R., Rose, E.A., Dietz, T., 2003. Footprints on the earth: the environmental consequences of Modernity. *American Sociological Review* 68(2): 279–300.