Cacao Impact Evaluation Baseline: Root Capital, KALEOS & CAUD,

In

Dame Marie, Haiti

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Report and Analysis
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Executive Summary

- This document describes a cocoa producer survey of a 201 households. The survey was conducted in the Department of the Grand Anse, Haiti. The study responds to a tender from Root Capital for an investigation into cocoa production in three Grand Anse communes (counties): Dame-Marie, Anse d'Hainault, and Chambellan.
- Root Capital supplied a loan and technical support to the Cooperative Agricole Union Developpement (CAUD) a cacao producer cooperative operating in Dame Marie. The loan was made in association with a Haitan-French investor KALEOS in support of an export contract to Europe of 100MT of fermented cocoa, between April and December 2014. The objective of the survey was to establish a data baseline to be used in gauging the impact of Root Capital's support of cocoa growers in the region through the line of credit provided to CAUD.
- While the sample size was not large enough to yield statistical significance on most variables, there is nevertheless a consistent and strong suggestion that a summary of differences between CAUD cooperative members and non-members include,
    - Members tended to be older (25% over age 60, vs. 14% of Non-Members)
    - Members were far more often male than female (73% male in the member group vs. 59% in the non-member group)
    - Members tended to have fewer children living in the household (2.3 vs. 3.1)
    - Members had more household members incapable of working (1.8 vs. 1.3, on average), suggesting that they had the capacity to care for them (something buoyed by the members' higher socio-economic status indicated elsewhere)
    - Members more often than Non-Members earn twice the income from the nine principal economic activities in the region ($354.04 vs. $189.69), more often owned at least on pig (47% vs. 34%), more often had a radio in the house (58% vs 27%), more often had someone in the household who worked a salaried job (9% vs. 5%), or who received remittances from overseas (15% vs 3%). Members also more often had a cement (57%, vs. 25% for Non-Members) rather than a dirt floor, reported suffering food scarcity much less frequently than non-members (91% vs. 76%), and more often had at least some education (72% vs. 59%)
- Regarding cacao production, the greater significance of cocoa in the lives of cooperative *Members* is reflected in their farming practices.
    - Cooperative Members were more likely to report actively trimming their cocoa plots to let more light into their gardens (95% vs. 23%). They also reported more use of compost or other organic fertilizers (6% of Members vs. 2% of Non-Members).
    - Members reported owning far more cocoa trees – 40% of Members reported owning more than 1,000 trees, compared to just 7% of Non-Members.
    - Cooperative Members were also more likely to report planting new trees in the past year (57% compared to 38% among Non-Members).

- Members produced more cocoa (149 *mamit* in the past two years, vs. 95 for Non-Members) and made significantly more money from the crop ($109.81 in the last year, vs. $42.11 for Non-Members).
- Members and Non-Members alike are enthusiastic about cocoa production, which focus group respondents referred to as a life source, and an inherited gift passed down over generations.

Cacao pod growing on tree

- Regarding cooperatives,
  - Members sold more of their crop to the coop over the last two years -- (209 mamit on average) --than to other buyers (65 mamit, among the 48 of the 137 Members who sold to others).
  - Cocoa growers reported receiving marginally higher prices from the cooperatives compared to other sales channels, presumably because there is no middleman siphoning off any of the profit when farmers sell fresh cocoa directly to CAUD, the exporter. In examining the data closely, however, it is the significantly larger sales volume and not the marginally higher sales prices that beget Members' significantly higher revenue from cocoa production in comparison with Non-Members.
  - Members expressed high levels of satisfaction with the cooperatives, signaling an open attitude toward meetings, training, sales, and other services.
  - Both members and non-members recognized the potential benefits offered by the cooperatives, demonstrating a willingness – an eagerness – to participate in CAUD programs, particularly its purchasing of fresh cocoa for fermentation.
- Regarding gender,
  - Members were less often in single male- (12% vs. 14%) or female-headed (16% vs. 22%) households than Non-Members.
  - Men were reportedly more active in cleaning trees, harvesting and deciding if specific price was acceptable.
  - Although not specifically asked, in focus groups women reported selling cacao more often than men. In contrast, men seemed to suggest that they sold more often than women.
  - Men far more than women own land with cocoa on it.

Open cacao pod

1.0 Introduction

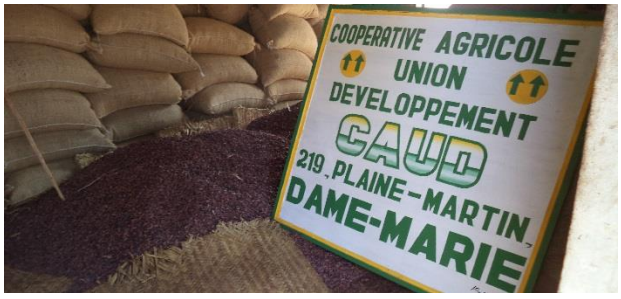
1.1 The Organizations

Root Capital is a nonprofit social investment fund that lends capital and delivers financial training to agricultural businesses in countries that, like Haiti, are poor and environmentally vulnerable. Through innovative strategies, Root Capital seeks to fill the 'missing middle' between microfinance and commercial banking, working with rural small and growing businesses to which we provide loans between $25,000 and $1,000,000. Since inception, Root Capital has provided over $220 million in loans to around 300 clients in 30 different countries. Where possible, our lending service is complemented with financial capacity building activities. Our headquarters are located in Cambridge (MA), while we also have offices in Costa Rica, México, Peru and Kenya (verbatim from Root website). Root Capital has worked in Haiti since 2010, providing loans mostly to coffee producers, and offering training to farmers. In order to more fully understand its impact and improve its training and other operations, Root Capital is conducting studies on smallholder farmers from 2014 to 2016 to evaluate changes in their crop yields, income levels, and other markers.

KALEOS is a Haitan-French ethical investment firm founded in 2012 with the mandate to "combine social, environmental and economic aspects all in one. Doing this, we enable our partners to improve their living conditions in the respect of nature." Achievements include,

- Establishment of a nursery of several thousand cocoa seedlings grown on many acres ensuring, thus, the renewal of species planted in Haiti.
- Research and development focused mainly for coffee fermentation and cocoa transformation processes.
- Both theory and practice training on fermentation and treatment technics provided to several cooperatives in southern Haiti.
- Assistance to several cooperatives in terms of production equipment: fermentation boxes, probe thermometers, pH meters, moisture meters, pulper, trucks…

CAUD or Cooperative Agricole Union Developpment is a cacao producer cooperative operating in Dame Marie. Founded in 1984, in 2014 CAUD reported having 706 member farmers (KALEOS lists 683 members: see annex).



CAUD Stock Room

1.2 The contract

Together with KALEOS, Root Capital initiated support to CAUD. In 2012-13 KALEOS conducted a feasibility study regarding the prospective export of cacao to France. In 2013 a sample of Cacao from the North Haiti Cooperative FECCANO presented to the 2013 International Cacao Awards in France was selected as one of the best in the

world. In the same year CAUD obtained organic certification from ECOCERT, making the prospects of marketing Haitian cacao in France that much more promising and increasing the potential income from the sale. Root Capital subsequently provided a line of credit to CAUD. The cooperative requested and received a loan for $140,000 to purchase wet cocoa to process at its fermentation facility in Dame-Marie and sell under an export contract to French KALEOS of 110MT of fermented cocoa, between April and December 2014. [i]

1.3 The Study

To be able to measure the social and economic impacts that technical and financial assistance will have on the business and its members, Root Capital commissioned Socio-Dig to conduct the present baseline survey among CAUD's members and other cocoa farmers from the department. Socio-Dig tasks included,

- Preparing the questionnaires and the focus groups conversation guide in conference with Root Capital
- Recruiting and train a team of surveyors
- Organizing, leading, transcribing, and translating into English gender related focus group discussions
- Conducting a treat and control group survey of 200 cacao producers, 150 CAUD cooperative members and 50 non-members
- Analysis and report of focus groups and survey data

2.0 Background

2.1 History of Cacao

Cocoa grows in equatorial regions around the world, and the world's main producers are in West Africa. The biggest West African producers – Ivory Coast and Ghana – grow 56 percent of the world's traded supply (Capelle 2008). Cocoa originated in the Amazon and Orinoco river valleys in South America. Cacao has been an important crop since pre-Columbian days, and was first brewed into a bitter drink by the Mayans, and then the Aztecs in what is now Central America and Mexico (Coe and Coe 2013). Both societies considered cacao a gift from the gods. Its Latin name is *Theobroma cacao*, and the genus, *Theobroma*, is from the Greek term for "food of the gods," and cacao pods were Mayan symbols for life and fertility (NIIR 2012). Several cacao producers who participated in focus groups conducted during the course of the present research referred to cocoa as their "source of life" – just as the Mayans did.

Anse d"Hainault Producer holding cacao pods

Cocoa has been grown in Haiti since the colonial period, although interest in the crop was initially limited by heavy taxation in Europe (Capelle 2008). The chocolate drink made from cacao was therefore primarily consumed by the wealthy. Production rose in the 19th century after demand increased, largely due to the introduction of the chocolate bar, and the steam engine, which facilitated mass production (Bensen 2008). Cocoa became a leading export crop for Haiti in the late 19th and early 20th centuries.

Production declined through much of the remainder of the 20th century (Bourdet and Lundahl 1989). Smallholder farmers who participated in focus groups for the present research blamed the decline on low prices that resulted from a marketing chain in which exporters of Haitian cocoa exercised monopoly power, setting prices low and discouraging production. One 31-year-old male cocoa farmer interviewed in the town of Chambellan said that in recent decades prices fell so low that some smallholders stopped growing it. "We had to cut cocoa and plant yams instead," he said. The lack of extension service and processing technology, especially for wet fermentation of cocoa beans – a key element in the production of high-quality cocoa –also has limited the industry's potential to access the upper echelons of the overseas markets.

Today, there are still approximately 25,000 cocoa producers in Haiti growing as much as 5,000 metric tons a year. Typically 45 percent or more comes from the North with strong production in the Northeast and, in the south, Grand Anse; 18,000 hectares are planted in cocoa, with cocoa orchards accounting for 21 percent of the country's agroforestry cover. Cocoa is grown under partial shade (with both timber and fruit trees). Cocoa plantations therefore provide vegetation cover, preventing erosion and preserving biodiversity of flora and fauna. Varieties grown in Haiti include Criollo – the most rare and prized type of cocoa – as well as Trinitario and Forastero.

Farmers in the Dame Marie area traditionally sold their cocoa to speculators or itinerant buyers known as "zombies" – (the term is meant to describe how they set out before sunrise and walk for miles to buy cocoa from growers in remote parts of the countryside). These buyers purchase dried cocoa beans, or "green" ones, which they then dry themselves, and sell to speculators. The speculators in turn supply the region's dominant buyer and exporter, Maison Geo Weiner SA (Café Selecto), a 1996 reinvention of Geo Wiener et Co, a coffee and cocoa purchasing company that has dominated cacao purchases in the area for at least 100 years. According the IFC (2011), Geo Wiener, S.A. is responsible for 1,080 MT of Haiti's 3,800 metric tons of cocoa exported annually. The partnership between Root Capital and CAUD offers an opportunity for change and healthy

Fresh Cocoa beans

economic completion because it gives producers, through the cooperative, access to a fermenting facility and an alternative means of reaching foreign buyers.

Dry Cocoa beans

The data described in this report offer a comprehensive picture of production levels, income from cocoa, tree planting and maintenance practices, inputs, and other key factors in cocoa production by members of CAUD. Responses from Non-Members provide a basis of comparison that is critical to establishing meaningful baseline performance indicators. These indicators will allow Root Capital to evaluate changes in cultivation, harvesting, and processing practices, as well as income and other factors, in follow-up and end-line surveys.

2.2 Design of Project and Apparent Impact

In pursuit of high quality cacao beans suitable for export, KALEOS trained and supports one engineer and 2 quality control technicians in the CAUD cooperative. They initiated a system whereby fresh cacao is purchased and fermented, a step necessary to produce premium export-quality cocoa. CAUD then sells directly to KALEOS, which in turns sells the organically certified cocoa on the European market. With KALEOS, a greater share of the income from the crop remains within the community. Producers who sell to the cooperative receive a higher price than speculators paid in years past. After the crop is sold in Europe, KALEOS sends CAUD a final payment (known locally as a *ristoun*,)—this year equal to 47% of the sale price. A share of the *ristoun* is then distributed to CAUD members in accordance with the amount they sold to the cooperative.

Root Capital's support to the CAUD Cooperative and KALEOS appears to have had an immediate and powerful impact on income of not only participating producers. With the support of Root and KALEOS, CAUD Cooperative paid producers 100 gourdes ($2.22) per mammit (4.6 lbs) for fresh cocoa. Although only 60% of the total price that the cooperative will ultimately receive after final sale of the cacao, this is twice the price that focus group participants recall Maison Wiener authorizing speculators to pay for cacao in previous years (note that the cooperative will receive the 40% difference but members will only receive a portion of that money). According to several focus group participants the competition prompted the doubling of prices paid to producers. Moreover, there are significant advantages that come with the fermentation process. CAUD with KALEOS support oversees the fermentation process. To do so it must purchase fresh cacao, thus relieving producers of the risk and time involved in drying cocoa beans

Survey respondents, focus group participants, and growers, as well as CAUD leaders, expressed a corresponding increase in enthusiasm for the crop. Focus group participants expressed a common desire to plant more trees, to rejuvenate through grafting those planted by parents, grandparents,

or more distant ancestors. Several focus group participants said their trees were far beyond their peak production years, estimating the age of their oldest trees at more than 100 years.[1]

3.0 Methodology

3.1 Focus groups

Three focus groups explored cooperative activities, effectiveness, problems with cocoa production, gender roles, production, value chain, and market issues. One focus group was with female CAUD members in Dame-Marie (recruited through CAUD), another with female cocoa farmers and merchants in Anse d'Hainault who were not members of a cooperative (recruited in the vicinity of the defunct LIVEDES Cooperative), and a third with male cocoa farmers in Chambellan (recruited in the town of Chambellan with assistance of local speculators). The researchers also interviewed CAUD leaders in a meeting at the start of the research. The focus groups took place from August 10th to August 12th. Focus group findings are noted throughout this report in accordance with topics. A summary focus group report is provided in a separate report along with full focus group transcriptions in both Kreyol and English.

Socio-Dig Focus Group with Anse d"Hainault Cacoa Producers

3.2 Quantitative Survey

3.2.a Questionnaire and Pretests

The original questionnaire was provided by Root Capital. The consultants translated the questionnaire into Kreyol and used ODK platform to program questions for application with Android Tablets. The Socio-Dig research team-- Five (5) enumerators, an enumerator-supervisor and the two consultants—subsequently engaged in three days of review and modification of the questionnaire. They performed pretests among the group. After each test errors were corrected and content adjusted for clarity and logical flow of the questions. The process facilitated a mastery of the questions as the client intended them.

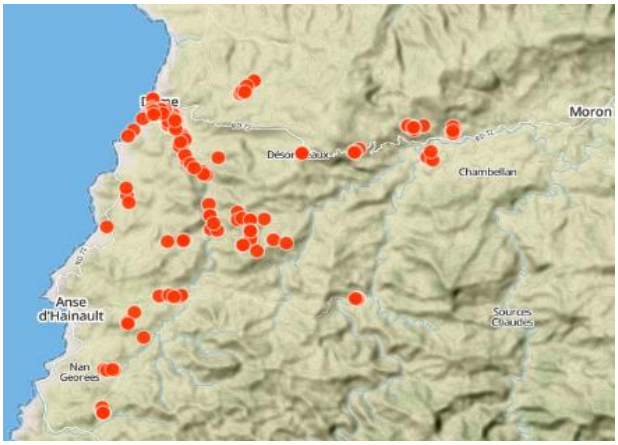
On August 9th through the 12th the entire Socio-Dig team—including Focus group leaders-- and the Root Capital representative gathered in Dame Marie. All participated or attended the focus

[1] The risk comes with the fact that the beans are dried in the sun. Frequent rain in the area means that the beans might get soaked and spoil.

group discussions to facilitate an understanding of the questions from the perspective of the cacao farmers. In this way the further development of the questionnaire was informed by responses recorded in the three focus groups. The questionnaire was then pretested with 15 farmers and final adjustments made.

The survey design was treatment (n=150) vs. control group (n=50). The treatment group respondents were selected from a master list of 701 names provided by KALEOS. Beginning at the randomly selected number two (2), Socio-Dig systematically selected one (1) in every four (4) names on the list, cycling through the list until 150 had been selected. Another 30 names were selected as a pool of replacements for those who could not be located or who were absent. +

To obtain a sample control group Socio-Dig used Google Earth to select ten (10) points systematically distributed across the landscape in the communes of Anse D'Hainault and Chambellan. Surveyors were instructed to get as close as practically possible to each point and then chose the nearest 5 households in which residents reported cultivating cacao.



Location of Interviews

3.2.b Geographic distribution

Responses from sellers to CAUD (including non-members) were all located in Dame Marie. This is to be expected, as CAUD is located in Dame Marie, and the cooperative only buys fresh cocoa. Those living or farming farther away have little incentive to join the cooperative because they are unable to transport their cocoa to CAUD quickly enough to meet the cooperative's standards. Non-Members were interviewed in all three communes: 36% (23) were in Dame Marie; 28% (18) were in Chambellan; and 36% (23) were in Anse d'Hainault (see Table 1 below).

Table 1: Location & Membership

Commune	Members		Non-Members		Totals	
Anse d'Hainault	0	0%	23	36%	23	11%
Chambellan	0	0%	18	28%	18	9%
Dame-Marie	137	100%	23	36%	160	80%
Totals	**137**	**100%**	**64**	**100%**	**201**	**100%**

3.2.c Cooperative Membership (treatment vs control groups), Age, and Gender

The number of cooperative Members outnumbered Non-Members by a ratio of greater than 2:1. There were 137 Member responses and 64 Non-Member responses. Figures 1 and 2 show the composition of this dataset by membership status, age category, and gender. As a whole, males outnumbered females in the dataset 69% to 31%. This changed with respect to cooperative membership status. Specifically, for Members the gender distribution was 73% male (100 responses) and 27% female (37 responses). For Non-Members, surveyors targeted 50% males and 50% female respondents. The 13 observations that were non-members came from the cooperative lists tilted the balance of non-members in favor of males, yielding 59% (38) non-members male respondents and 41% (26) female.

Figure 1: Gender of members (N=137)

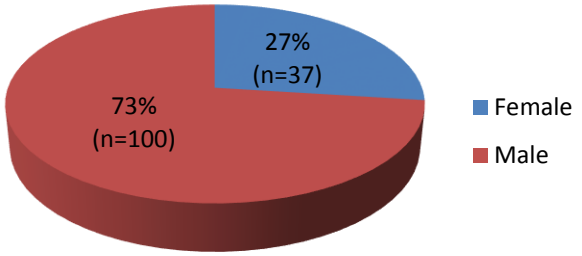
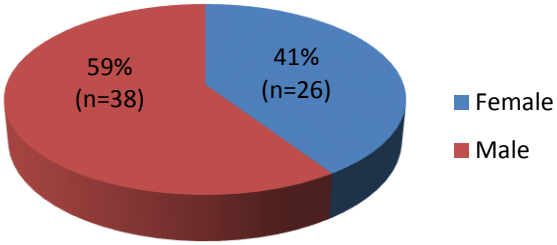
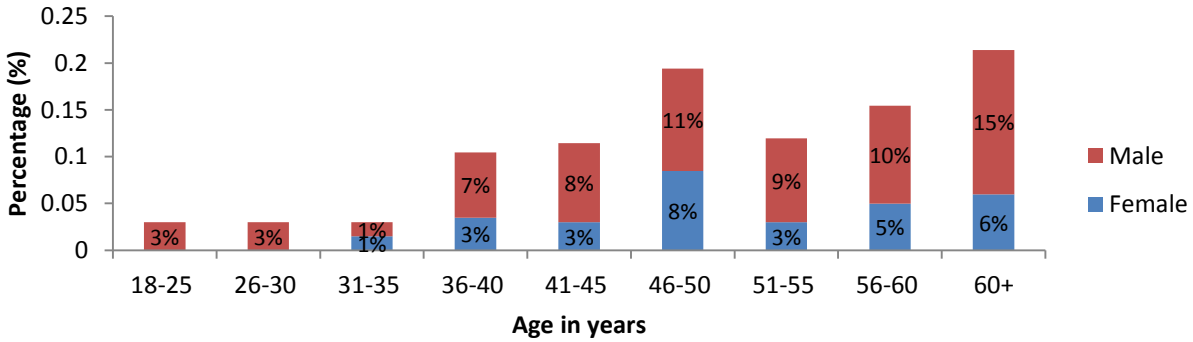


Figure 2: Gender of non-members (N=64)



The producer sample population is skewed towards the higher age ranges. For Members and Non-Members, the median age category was 51-55 years for men, and 46-50 for women. The two oldest categories (55-60, and more than 60) represent 37% of all observations. For Members, 38% of responses come from those age categories while for the Non-Members that number is 34%. The highest concentration is the over-60 age group, accounting for 18% of the Member and 15% of the total. No other age group represents more than 11% of the data (Figure 3).

Figure 3: Composition of Data by Age & Gender (N=201)



3.2.d Complications and Absentees

Treatment groups sample: The list that KALEOS provided turned out not to be cooperative members but rather purchasers. Most were also cooperative members but thirteen (13) were not. Thus the final sample total of 201 interviews yielded a treatment group of 137 cooperative members and 64 non-members.

Control group: Because of the rough terrain, poor infrastructure and practical constraints of time and travel, the surveyors could not reach most of the points and were forced to settle for nearest proximity to selected points.

Absentees: A total of thirteen of those names selected from the KALEOS list were individuals who were deceased (3), living in Port-au-Prince (1), or otherwise others could not be located (9).

3.3 Equipment and software

The survey questionnaires were programed into Samsung Galaxy and Google Nexus tablets using ODK platform. The app program GPS Essentials was downloaded onto each tablet and used to locate the pre-selected longitudinal and latitudinal coordinates (preselected on Google Earth). Socio-Dig's Ona site account was used to process the data (https://ona.io/sociodig/). Excel and SPSS software were used during analysis.

Socio-Dig surveyor Sylvestre Prophete interviewing Dame Marie cacao producer

3.4 Team Structure, logistics and Field Survey

The interviews were conducted over 16 days in August 2014. Five surveyors and one supervisor traveled by motorcycles and conducted the interviews. Enumerators and supervisors slept at base camps located in Dame Marie. Data was uploaded to the Ona site and reviewed daily to monitor quality control.

4.0 Demography

The household sizes reported by Members and Non-Members were essentially identical. Members had an average of 5.7 people per household; Non-Members had 5.6 people per household. Members have a lower average number of children age 18 or younger in the household than non-members (3.1 vs. 2.3) a difference that is statistically significant (p>95%). In contrast to the higher numbers of children, Cooperative member households reported a greater number of household members who were not capable of contributing labor to household productive activities (1.8 vs. 1.3), something that was not statistically significant at p>95%, but nevertheless relatively pronounced and may be a consequence of the older age categories evident among members households (see Table 2).

No Non-Members reported a new person entering the household in the past year. Four percent of Members had a person join the household (three added an adult, two added a child). Twenty percent (20% of Members; 17% of Non-Members) had someone who left the household in the past year. Most of those leaving were adults, including 57% (17 out of 29) of departing household members reported by Members and 64% (7 out of 11) of those reported by Non-Members. [ii]

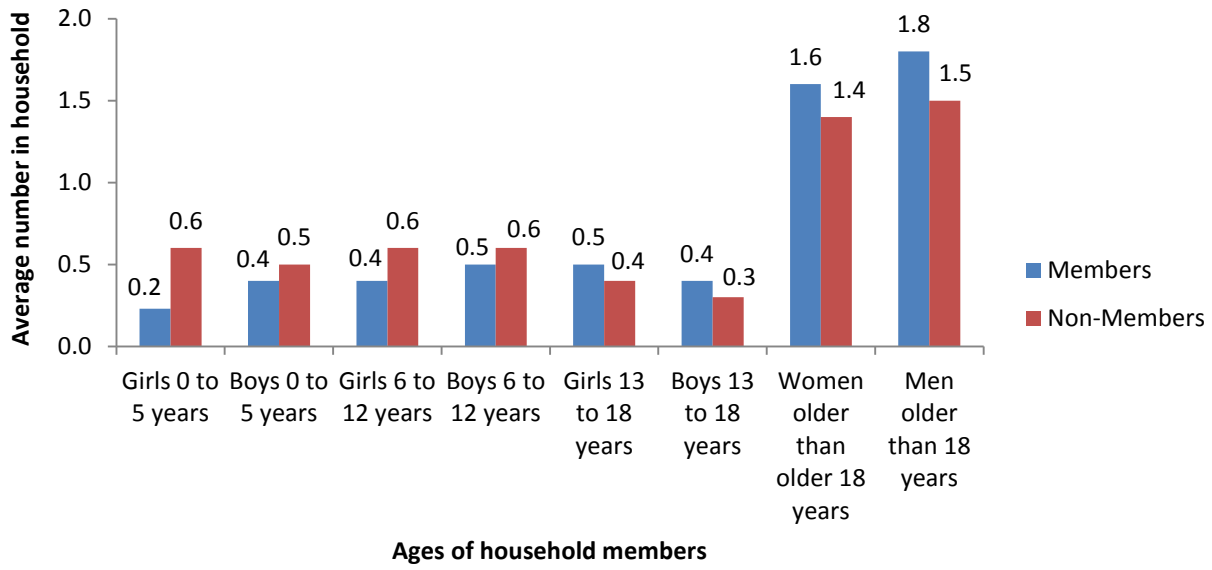
Anse d'Hainault family with semi-dried cocoa beans in garden

Table 2: Household Size (N=201)

Household demographics	Member (n=137)	Non-Member (n=64)	Total (N=201)	Stat. Sign. Difference (p>.95)
Average Household size	5.7	5.6	5.7	No
# Children 18 or under	2.3	3.1	2.5	No
# HH members who cannot work	1.8	1.3	1.6	No
% HHs adding a person in past year	4%	0%	2%	No
% HHs with someone who left	20%	17%	20%	No

The higher concentration of Members in the higher age ranges is reflected in the overall age composition of households in the sample. The slightly younger Non-Member control group had a higher average number of young children: Non-Members had an average of 1.1 children in the 0 to 5 age group, for example, compared to 0.6 children in the same age group in Members' households (Figure 4). Non-Members had 1.3 children in the 6 to 12 age group, compared to 0.9 for Members. The difference essentially disappeared in the 13 to 18 age group, with an average of 0.8, with rounding, in both Non-Member and Member households. Members, however, reported more adults in their households – 3.4, on average, compared to 2.8 in Non-Member households.

Figure 4: Age Composition for Households (N=201)



4.1 Household Heads

The majority of self-identified household heads were men (Table 3). But, if we examine self-reporting more closely, we can identify several problems. To begin with there was a tendency for non-members to have greater number of single male (14% vs 12%) and single female headed households (22% vs. 16%; See Figures 5 and 6), another indication of the relatively lower socio-economic status of non-members. Neither observation was, with the small sample size, statistically significant.[iii]

Table 3: Respondent-Identified Household Head

	Respondent-identified head			
Sex of respondent	Both	Respondent	Spouse	Total (N)
Female	6 (10%)	47 (76%)	9 (15%)	62 (100%)
Male	5 (4%)	129 (96%)	0 (0%)	134 (100%)
Total	11 (6%)	176 (90%)	9 (5%)	196 (100%)

Figure 5: Non Member (n=64)

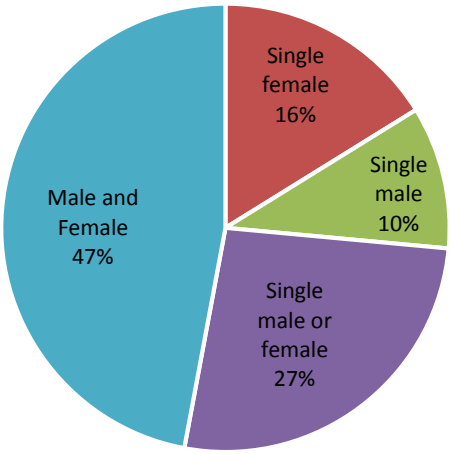
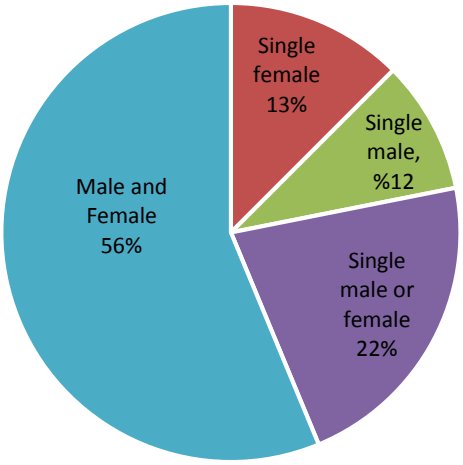


Figure 6: Member (n=137)



If we use the data of those households with a single vs. couple living in them the results take on a different meaning. Of the 63 female respondents; 1 is removed because she lives in a house headed neither by herself or her spouse; 32 are removed because they have no spouse so the woman is the only candidate to head the household. That leaves 30 women, 9 of these identified their husband as spouse, 6 as both her and her husband and 15 of them identified themselves as head (Table 5). That means that of those respondents who were interviewed and who had a husband in the house, ½ with identified themselves, rather than their husband the household's head (Table 5).

For men, of the 134 male respondents, 4 are removed because they live in a household headed neither by themselves or a spouse; and 25 are removed because they have no spouse at all see Table 4). This means that of the 105 households with both a male and female in them and that a male respondent could have chosen himself, his spouse or both as household heads, in 5 cases they chose both, in 0 cases they chose their spouse, and in 100 cases they identified themselves as the household head (see Table 5).

Table 4 Household Presence of Man, Woman, or Both

	Respondent-identified head			
Present	Both	Respondent	Spouse	Total (N)
Single Female head	0 (0%)	32 (100%)	0 (0%)	32 (100%)
Single Male head	0 (0%)	26 (100%)	0 (0%)	26 (100%)
Male/Female heads	11 (0%)	118 (0%)	9 (0%)	138 (100%)
Total	11 (8%)	176 (86%)	9 (7%)	196 (100%)

Table 5 Respondent Identified Household Headship				
	Reported Head			
Respondent	Female Headed	Male Headed	Male/Female Head	Total
Female	15 (50%)	9 (30%)	6 (20%)	30 (100%)
Male	0 (0%)	100 (95%)	5 (5%)	105 (100%)

The rather strong suggestion is that, had women been interviewed we would have gotten a very different response profile. Moreover, there is the influence of different gender regimes based or differential presence of men vs. women. Where adult males are not present or scarce women take on tasks that would other wise fall to men. Another possibility is that the surveyors had their own prejudices that influenced responses. In fact 7 of the 9 women who identified their spouse as household head were interviewed by the same surveyor. Either way, a much better means to determine who is "head of household" is with the question, "who most often makes the household decisions regarding expenses." This question yields more consistent results from both male and female respondents and show that women slightly more than men tend to be in charge of the household (see Table 6).

Table 6: Reported HH Decision Maker			
	Who make the decisions		
Respondent	Female	Male	Total
female	18 (58%)	13 (42%)	31 (100%)
male	59 (52%)	53 (47%)	112 (100%)
Total	77 (53%)	66 (46%)	143 (100%)*

*Single male and female headed households removed

5.0 Gender

5.1 Gender, Cooperatives and Marketing

For the purposes of a gender balanced program and gender balanced cooperative membership the figures are not unusual (see Figures 1 - 3). Agricultural cooperatives in Haiti are traditionally male dominated. Traditional rotating and reciprocal agricultural work groups (called *kwadi*) have always been male. Men also traditionally dominated political roles, making associations and cooperatives a naturally male sphere of influence. However, the role of women in marketing suggests that if the cooperative is focused on marketing, it may be a mistake to focus on men.

5.2 Gender and production

Throughout Haiti women are principally responsible for marketing harvests of all crops. Cacao is exceptional in that it is heavy and transport to the speculator arduous, making it more suitable undertaking for men. As Chambellan focus group respondent Marco Belizaire, (age 31, Cacao producer and University civil engineer) said,

the cocoa, it has syrup. Its very very heavy. You can't carry it by yourself, you need someone with you……you should have an animal.

However, the selling of Cacao appears, as with other crops, primarily a female activity. Dame Marie focus group respondent Elvecia Alexis, (age 60, cacao producer and CAUD Cooperative Member) explained,

> *The women sell the cocoa. I am the one who sells my cocoa. The men carry it, but it is the women who sell it*

Dame Marie Cooperative Members in Focus Group with Socio-Digs Nahomie Jeannis and Jenny Lacombe

5.3 Gender and production

An overwhelming majority of respondents (85% of *Members*, 86% of *Non-Members*) reported that men are responsible for the majority of the cocoa production tasks in the field (Figure 7). In focus groups, both men and women explained that this was because tending cocoa trees is physically demanding work, involving such strenuous tasks as climbing trees and hacking off branches with a machete. "The man can take his machete, climb the cocoa tree, clean it and cut out the branches," a female CAUD member said in Dame-Marie. "I cannot do that." A similar number said men are the ones responsible for making decisions on when, or whether, to plant cocoa, whether to trim cocoa trees, and whether to sell the harvest to a particular buyer at the price offered (Figure 8). However, there were significant discrepancies in focus groups between what men said vs. what women said. Women tended to emphasize their own role in production and men theirs. As with reports on household headship seen in the previous section, the much larger number of male respondents meant that there was significant gender bias (see Section 5.4 below). Moreover, as mentioned above, where men are absent women in rural Haitian tend to assume tasks that would otherwise fall to the men.

Anse d'Hainault woman harvesting cacao

Figure 7: Gender of person making decisions on cocoa production & selling (N=201)

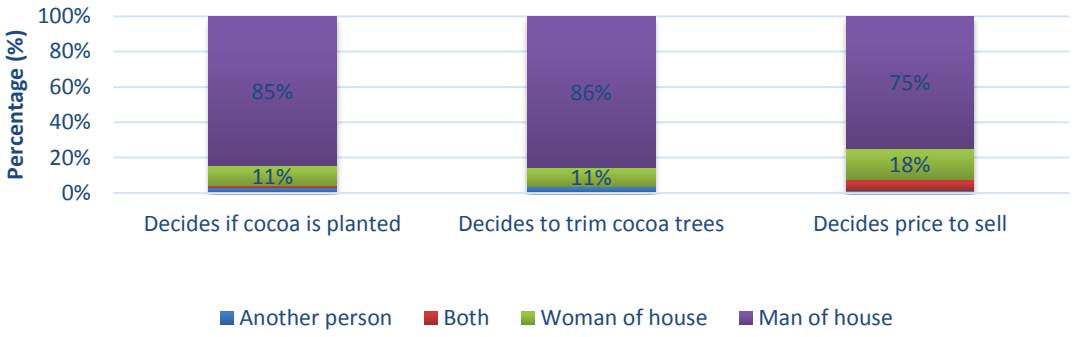
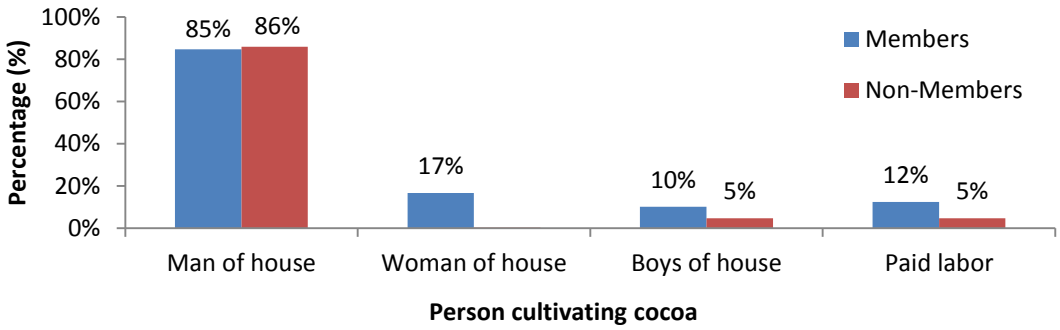


Figure 8: Person who cultivates cocoa (N=201)



5.4 Gender and land

Most Members and Non-Members said that their cocoa land was owned by the man or the household rather than the woman. Among Members, 80% (109) said the woman of the household owned no cocoa land; 59 (92%) of the Non-Members said the same (Table 7).

Table 7: Quantity of land with cocoa owned by man or woman of the household

	Women		Men	
	Members	Non-Members	Members	Non-Members
None (0 Kawo)	109	59	22	24
Small (1.0 Kawo)	14	3	42	15
Medium (2.0-3.0 Kawo)	12	2	56	22
Large (4.0-5.0 Kawo)	0	0	12	2
Extra Large (>=6.0 Kawo)	0	0	3	1

5.5 Gender Bias in Respondent Reporting

Despite the preceding, significant complication with the report on male vs. female roles in Cacao production is the sex of respondents. As with household headship, if we examine who is doing the reporting then we see that men more often than women report males as principal worker (Tables 8 and 9).

Table 8: Sex of Person who Usually Cleans the Orchard by Sex of Respondent		
Sex of Respondent	Woman does *not* usually clean the orchard	Woman *does* usually cleans the orchard
Female	59%	41%
Male	88%	12%
Total	79%	21%

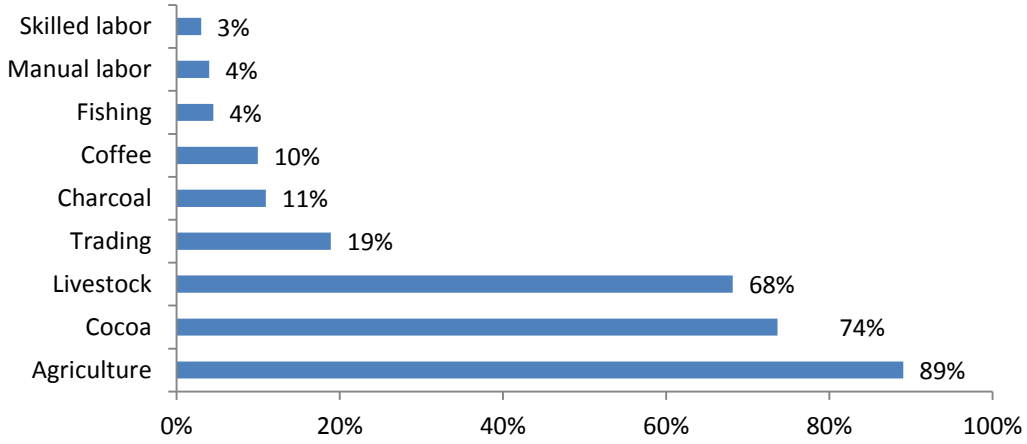
Table 9: Sex of Person who Usually Harvests by Sex of Respondent		
Sex of Respondent	Woman does *NOT* usually harvest cacao	Woman *DOES* usually harvest cacao
Female	32%	68%
Male	64%	36%
Total	54%	46%

6.0 Economic Status and Sources of Income

6.1 Sources of Income

The two most important sources of income cited by survey participants overall were agriculture (involving crops other than cocoa) and cocoa production (see Figure 9 below). Eighty-nine percent listed agriculture as their main source of income, while 74% said it was cocoa. The raising of livestock was a close third, at 68%, with other pursuits such as commerce, charcoal production, coffee production, fishing, and labor trailing far behind.

Figure 9: Sources of household income (N=201)



The three most frequently reported actual income sources over the past year, for both Members and Non-Members, were agriculture, cocoa, and livestock (Table 10). Agriculture (involving crops other than cocoa) was the most common income source for both groups, cited by 88% of Members (121 out of 137) and 90% of Non-Members (58 out of 64). Overall, cocoa was the next most common income source, with 77% (106) of Members and 66% (42) of Non-Members reporting income from cocoa in the last 12 months. Sixty-eight percent of Members (93) and 69% of Non-Members (44) reported income from livestock. Among those reporting income from these sources, Members reported slightly higher average income from agriculture and cocoa ($90.14 and $90.60, respectively) than did Non-Members ($85.24 and $80.25, respectively). The two groups reported nearly the same average income from livestock, $50.31 for Members and $51.97 for Non-Members. Fishing, trade, and skilled and manual labor were more lucrative income sources, but they were also considerably less common. Twenty-three Members reported income from trade, with an average of $138.52 for the past year. Nine percent of Non-Members reported income from trade totaling, on average, $131.28. Members involved in fishing and labor, both skilled and unskilled, reported even higher income in the previous year, but only 3% had income from fishing or skilled labor, and only 5% had income from unskilled labor. [iv]

Table 10: Income over last 12 months (N=201)									Stat. Sig. Difference (p>.95)
	Members (N=137)				Non-Members (N=64)				
	n=	%	HTG	USD	n=	%	HTG	USD	
Agriculture	121	88%	4541.91	$100.91	58	91%	3044.83	$67.66	
Cocoa	106	77%	4941.23	$109.81	42	66%	1895.12	$42.11	
Livestock	42	31%	6215.48	$138.12	15	23%	3272.67	$72.73	
Trade	31	23%	6808.44	$156.18	6	9%	3166.67	$70.37	
Charcoal	15	11%	1462.50	$34.67	4	6%	1687.50	$37.50	
Coffee	11	8%	1127.27	$25.05	8	13%	1150.00	$25.56	
Manual labor	7	5%	19428.57	$431.75	1	2%	48000.00	$1066.67	
Fishing	4	3%	10625.00	$236.11	5	8%	6400.00	$142.22	
Skilled labor	4	3%	8000.00	$177.78	2	3%	15000.00	$333.33	
AVERAGE INCOME				$345.04				$189.68	**Yes**

6.2 Proxy Indicators

Member households were more likely than Non-Members to report two key economic resources – salaried employment and remittances send from abroad. Nine percent of Members had someone with salaried employment in the household, compared to 5% of Non-Members. Also, 15% of Members were receiving remittances from loved ones overseas, compared to just 3% of Non-Members. Only remittances were, for the sample, statistically significant. As seen earlier, members reported an average of 1.8 residents who are unable to contribute household work; Non-Members had 1.3 non-contributing household members, on average. This data, when considered with other economic advantages reported by Members, supports the theory that the presence of non-contributing household members is a sign of economic strength – the household can support people unable to contribute – rather than an indication of increased economic stress and vulnerability. [v] [vi] [vii]

Table 11: Summary of Household Economic Proxy Indicators(N=201)				
Proxy Indicators	Member (n=137)	Non-Member (n=64)	Total (N=201)	Stat. Sig. Difference (p>.95)
Person in household has salaried employment	12 9%	3 5%	16 8%	No
Household receives remittances from abroad	20 15%	2 3%	22 11%	Yes
# HH members who cannot work	1.8	1.3	1.6	No
Children not in school	2%	3%	2.5%	No
Person in House Owns a Pig	47%	34%	43%	No
Radio in House	58%	27%	48%	Yes

Another proxy indicator of economic status was floor and roof type (Table 11). The most common floor type was bare earth, reported by 53% and the most common roofing material was tin. With regard to floor type, there was a statistically significant difference between non-members and members. Non-members were more likely to have dirt floors (75%) than Members (43%), the relationship is suggestive of economic difference in the two groups. Regarding roof type, there was no statistically significant difference between members and non-members. The most common material was tin (81% vs 80%), followed by thatch (12% vs 8%). [viii]

Table 12: Household Construction					
	Material	Members (n=137)	Non-Members (n=64)	Total (n=201)	Stat. Sign. Difference (p>.95)
Floor	Dirt	43%	75%	53%	Yes
	Cement/concrete/tile	57%	25%	47%	Yes
Roof	Tin	81%	80%	81%	No
	Thatch	12%	8%	11%	No
	Plastic	1%	9%	4%	No
	Concrete	5%	3%	4%	No

6.3 Food Security

The majority of both groups said they had experienced difficulty accessing food at some point in the past 12 months (Figures 10 and 11). Among Non-Members, 91% (n=58) reported such periodic crises, compared to 76% (104) of Members (Figure 10). [ix] Non-Members were most likely to report household food shortages in March (42%), with continued elevated percentages in April through June (despite the arrival of the Spring cocoa harvest, the first of two main cocoa seasons each year). Members were most likely to report difficulty accessing food in June, between the two main cocoa harvests in spring and fall. The difference in Members vs. Non-Members was statistically significant (p>95%). Forty percent of members (n=55) said their households had experienced difficulty getting enough food in June (Figures 10 & 11); 43% of Non-Members reported March as the most difficult month. [x]

6.4 Education

Education was also used as a proxy indicator of socio-economic status (Table 13). There was no statistically significant difference between educational levels reported by Members and Non-Members, but once again the large gap between members and non-members who had no education at all (28% vs. 41%) is highly suggestive of a substantial difference in socio-economic status and the lack of statistical significance the result of the small size of the non-member sample. The largest number of both groups had some level of elementary school education, with 54% of Members and 45% of Non-Members having reached a level from 1st through 6th grade. Only one person in each group had attended university or professional school.[xi]

Figure 10: Respondent Reported that HH had Difficulty Accessing Food at some Point During the Last 12 Months (p > 95%)

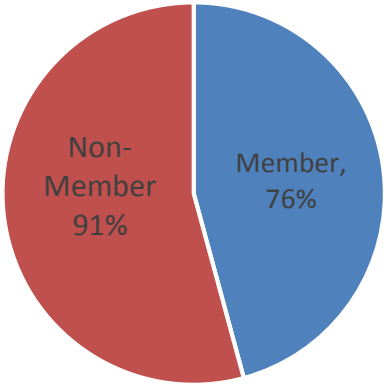


Figure 11: Months which respondents had most difficulty accessing food
N = 201

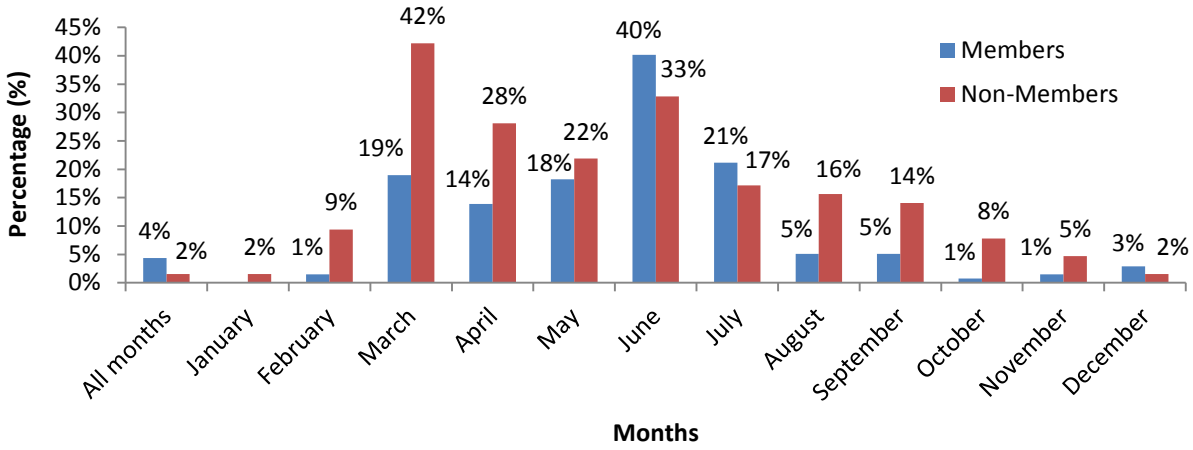


Table 13: Education levels of respondents					
Level of Education	Member		Non-Member		Stat. Sign.
No school	39	28%	26	41%	No
1st grade through 6th grade	74	54%	29	45%	No
7th grade through 13th grade	24	17%	8	12%	No
University or professional school	1	1%	1	2%	No
Average years of school	**3.7 years**		**3.1 years**		**No**

6.5 Loans

Information on loans was gathered to offer insight into the alternative funding sources available to both members and non-members (Table 14). The very small number of borrowers in both groups combined (total = 39), once again, made statistical significance unlikely. Nevertheless, the slightly higher number of cooperative members who borrow, particularly from the 'kes popile' (local credit union), adds to the growing body of quantitative findings that demonstrate the substantial higher socio-economic status of cooperative Members vs. Non-Members. Twelve percent of Members vs. 5% of Non-Members reported having borrowed money from a friend, family member or other person from their neighborhood over the last year, while another 9% of Members and 8% of Non-Members had borrowed from an institution (Table 14). Among those who borrowed from an institution, the most common loan source was a *kes popile*, a community loan fund. Fifty-four percent of Members who borrowed money from an institution got their loan from this source. [xii]

Table 14: Sources of borrowed Money

Lender	Member (n=137)	Non-Member (n=64)	Total	Stat. Sign. Difference (p>.95)
Family, Friend, Patron	17 (12%)	3 (5%)	20 (10%)	No
NGO	0 (0%)	1 (1.5%)	1 (0%)	No
Local Association	2 (1.5%)	1 (1.5%)	3 (0%)	No
Kes Popile	7 (5.1%)	0 (0%)	7 (0%)	No
Fonkoze	2 (1.5%)	1 (1.5%)	3 (0%)	No
Sogesol	0 (0%)	2 (3.1%)	3 (0%)	No
Other	2 (1.5%)	0 (0%)	2 (0%)	No
Total	**30 (22%)**	**8 (13%)**	**39 (19%)**	No

Respondents receiving loans from family, friends, and neighbors borrowed, on average, $93.07 and paid 47.89 in interest (Table 15). Those borrowing from institutions borrowed an average $152.51 and paid $101.80 in interest. Only 4 of the Members could provide an estimate of the profit they realized from the loan, with their estimates ranging from $44.44 to $222.22. Overall, the 9 borrowers reporting profits on loans from institutions made an average of $81.49. The most common reason for borrowing was business or trade (56%), followed by personal needs (22%), education (17%), and purchasing land (6%) (Table 16).

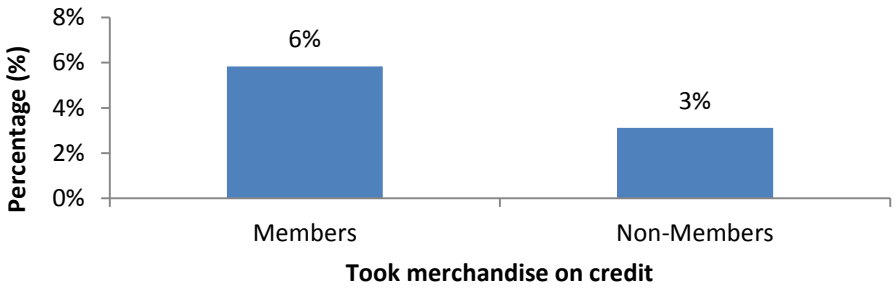
Table 15: Average loan amount

Variables	Family, friend, HTG	Family, friend, USD	Institution HTG	Institution USD
Average amount loaned	4188	93.07	6863	152.51
Average interest paid	2155	47.89	4581	101.80
Average total amount payable	9062	201.38	11444	254.31
Transport to get loan	N/A	N/A	56	1.24
Profit made on loan	N/A	N/A	3667	81.49

Table 16: Purpose of loan			
	Member	Non-	Total
Business or trade	38%	100%	56%
Purchase land	8%	0%	6%
Education	23%	0%	17%
Personal needs	31%	0%	22%
Total	**100%**	**100%**	**100%**

Smaller subsets of both groups reported having borrowed by taking merchandise on credit, then selling at a reduced price to raise cash quickly (Figure 12) . Six percent of Members (8) and 3% of Non-Members (2) had borrowed in this way in the past year, with the merchandise taken on credit being most frequently sacks of flour, sugar, and rice, which were all reported by 7 of the 10 people taking merchandise on credit. The small population in these categories made calculating statistical significance. But once again, the greater financial activity among cooperatives reinforces the trend of higher socio economic status.

Figure 12: Took merchandise on credit to sell it at a lower price and use money



7.0 Agricultural Production

7.1 Crops Grown

The three most important non-cocoa crops were yams, plantains or bananas, and beans (Figure 13). Overall, 88% of respondents listed yams as one of the three crops that produced the most income for them; 72% listed plantains or bananas; and 55% listed beans, followed by corn (26%) and breadfruit (12%). For trees (Figure 14), cacao was far and away the most important (94%). Followed by breadfruit (74%), coconut (51%) and the interestingly, mahogany for lumber (45%).

Figure 13: Top three crops earning the most income (N=201)

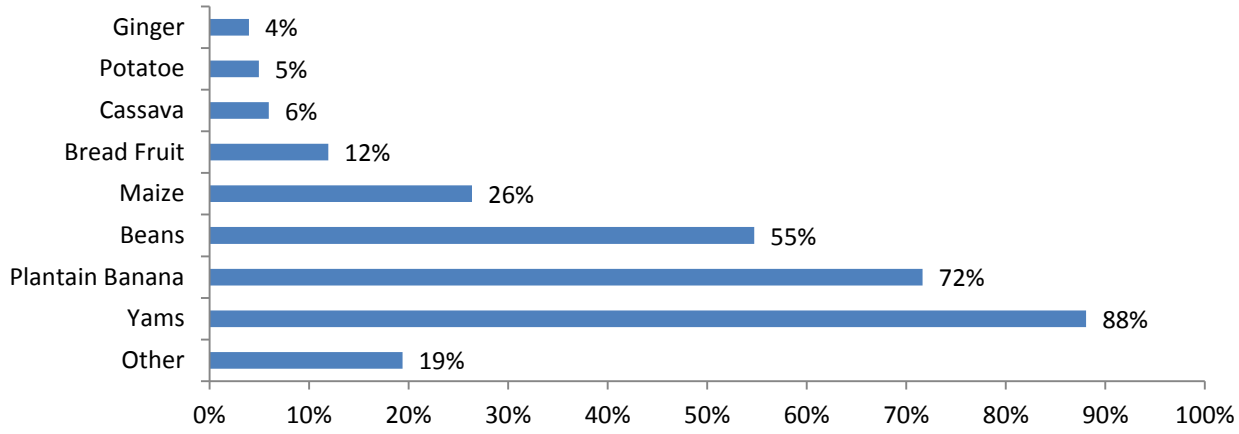
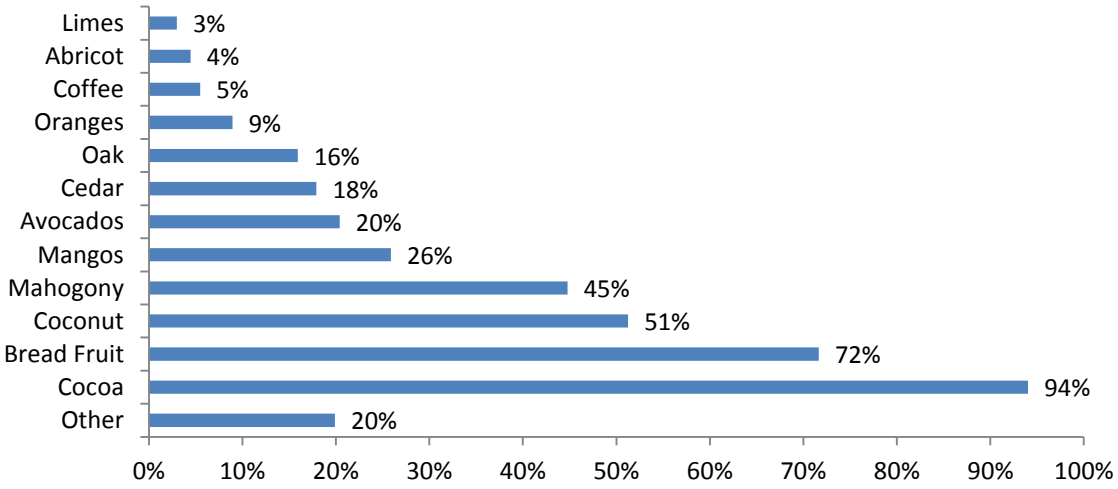


Figure 14: Trees owned by household (N=201)

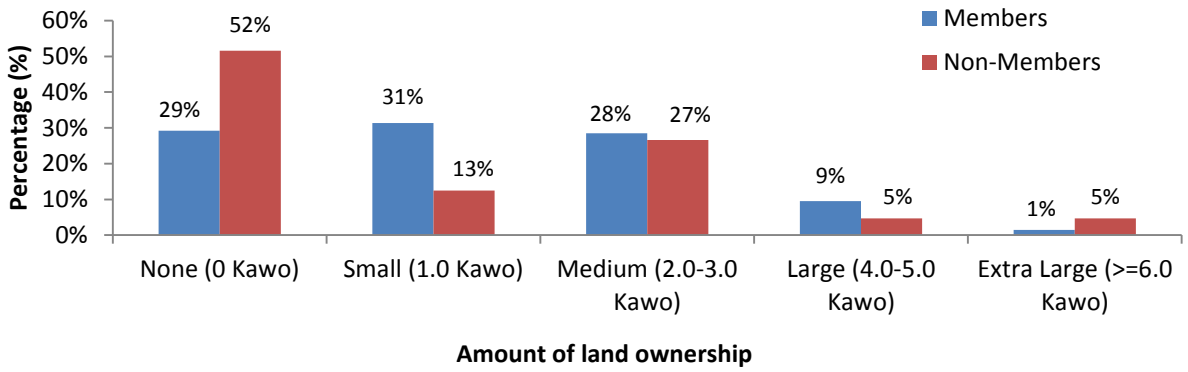


7.2 Land Ownership

Estimates were reported in *kawo* (French Carreaux), a standard unit of measure familiar to farmers in the area, and equal to 3.19 acres (although land is typically sold by the *centieme* (kreyol = *santyem*), a unit equal to 1/100th of a *kawo*). For ease of analysis, these categories were then coded into four categories—Small (plus or minus 1 *kawo*), Medium (2-3 *kawo*), Large (plus or minus 3-4 *kawo*), and Extra Large (6 or more *kawo*). Among Members, the most common response for land owned was Small at 31% (43 responses), followed closely by None (29%) and Medium (28%). Among Non-Members, slightly more than half reported that they owned and farmed no land at all. Thirty-six percent (50) of the Members reported that they worked no land, while only 29% (40) said they owned no land (Table 17 and Figure 15).

Table 17: Average land distribution in Kawo (N=201)			
Average land	Member (n=137)	Non-Member (n=64)	Stat. Sign. Difference (p>.95)[xiii]
Average quantity of land	1.45	1.38	No
Average quantity of land worked	1.12	1.07	No
Average quantity of land with cocoa	1.12	1.06	No

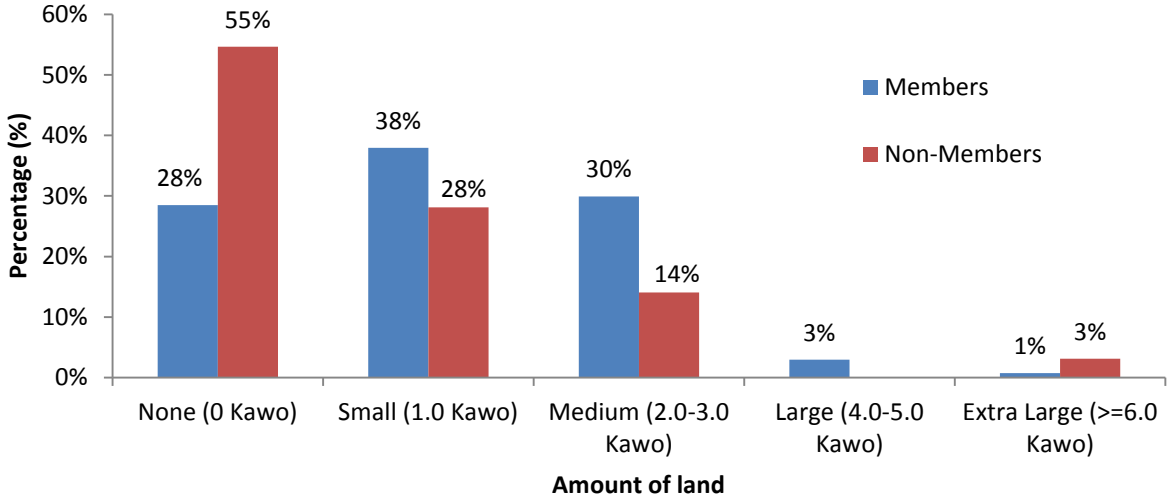
Figure 15: Land ownership (N=201)



7.3 Average Plot Size (*kawo*)

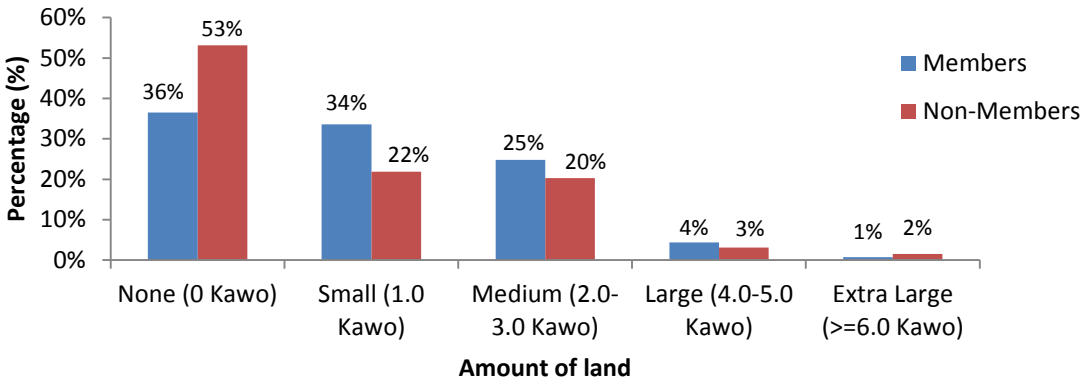
The average size of plots planted with cocoa reported by respondents closely followed the data on land owned and land farmed shown above (Figure 16). Among Members, 28% (39 out of 137)

Figure 16: Quantity of land with cocoa (N=201)



reported owning no cocoa land, compared to 55% (35 out of 64 Non-Members). Among Members with cocoa land, the vast majority reported having Small plots (38%) or Medium plots (30%). These sizes were also the most common among Non-Members (28% Small plots, 14% Medium). Only 7 respondents in total said they had 4 *kawo* or more of cocoa land (Figure 17).

Figure 17: Quantity of land usually worked (N=201)



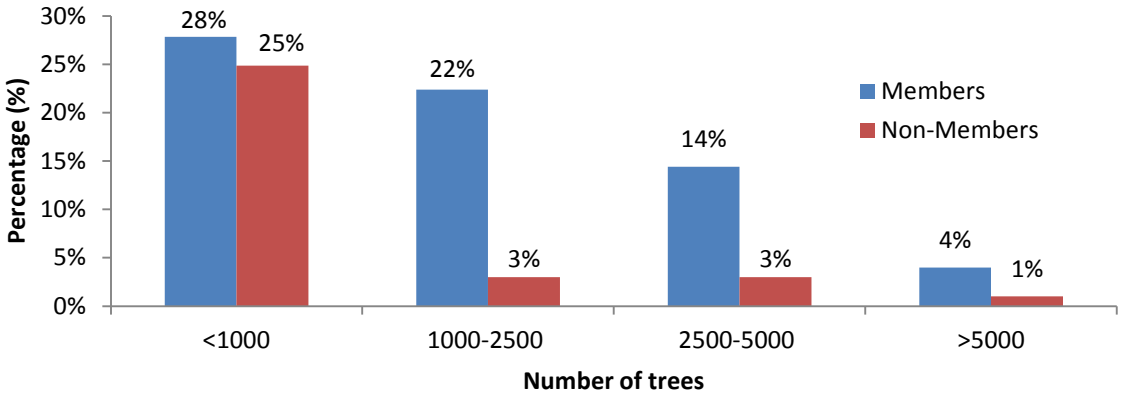
7.4 Land Allocation

As Figures 16 and 17 (above) demonstrate, the area of land respondents reported owning and working correlates with the area on which they said they had cocoa. This data reinforces testimony by focus group participants in Dame-Marie, Chambellan, and Anse d'Hainault, who said that cocoa thrives "everywhere" in the vicinity, and everybody has it. This is reflected in the survey, in which 94% of respondents reported having at least some cocoa trees (Figure 18), even if a minority said they did not have or work any land that they described as a cocoa grove. In times of extraordinarily low cocoa prices, farmers reported that some people cut down cocoa trees to plant yams (another important crop). In one case, a focus group participant said he had heard of people in the past burning cocoa pods rather than bothering to transport them to a buyer, because the price was so low (see Focus Group Report). Participants in all three focus groups, however, expressed enthusiasm for the crop – particularly because cacao is year-round cash crop, not just in the main Easter and October cocoa harvesting seasons. Focus group participants said they cultivated cocoa wherever it would grow.

7.5 Tree Ownership

The rate of tree ownership is inconsistent between Members and Non-Members. Seventy-eight percent of Non-Members had fewer than 1,000 cocoa trees, compared to 41% of Members. Thirty-three percent of Members had 1,000 to 2,500 trees, 21% had 2,500 to 5,000 trees, and 6% had more than 5,000 (see Figure 18). CAUD Members reported an average of 2,036 cocoa trees owned by members of their households, compared to 1,090 for Non-Members.

Figure 18: Tree ownership (N=201)



Both groups expressed a desire to possess more cocoa trees, with 31% of cooperative Members and 17% of Non-Members saying they wanted more than 5,000 (Table 18). This desire to have more trees might work contrary to sound production practices. Members (whose households owned 2,036 cocoa trees on average) said, on average, that they would like to have 7,069 trees (on average, not including seven respondents who expressed the unrealistic desire to have 100,000 or more trees). This, given the average Member's possession of 1.53 *kawo* of cocoa land, would result in a density of 4,620 cocoa trees per *kawo*. CAUD President Gesner LaGuerre noted that cooperative Members have been told that the optimal number of trees is 1,064 per *kawo* – leaving an optimal 4 meters of spacing between trees -- but he says that only about half of them respect the rule. "People just let the trees grow as they will, without giving them the room they need," the CAUD president said.

Table 18: Tree Ownership, Actual/Desired (N=201)

	Members				Non-Members				Total			
Number of trees	Actual		Desired		Actual		Desired		Actual		Desired	
<1000 Trees	56	41%	16	12%	50	78%	18	28%	106	53%	34	17%
1000-2500 Trees	45	33%	38	28%	6	9%	20	31%	51	25%	58	29%
2500-5000 Trees	29	21%	41	30%	6	9%	16	25%	35	17%	57	28%
>5000 Trees	8	6%	42	31%	2	3%	11	17%	10	5%	53	26%

7.6 Tree Planting

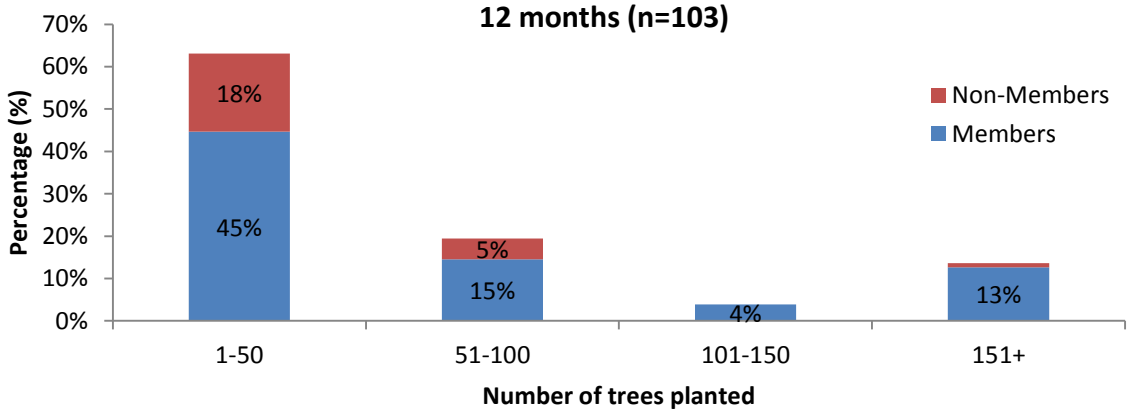
Of the farmers surveyed, 57% of Members planted new trees as compared to only 39% of Non-Members (Table 19). The data suggests that farmers are interested primarily in the traditional Criollo variety – "the old cocoa," as CAUD President Gesner LaGuerre called it – which is hardier and produces the highest quality beans. Among the 78 members who planted cocoa trees in the last year, 64 (82% of Members planting trees, and 43% of members overall) planted the Criollo variety, compared to 2 (1% of Members) who planted Trinitario, and 3 (2% of Members) who planted Forastero (Table 20). Among Non-Members, 76% of those planting trees (19 respondents, 30% of all Non-Members) planted Criollo.

Table 19: Households that planted new trees in past 12 months (N=201)							
Planted new trees	Members		Non-Members		Total		Stat. Sign. Difference (p>.95)[xiv]
Didn't plant new trees	59	43%	39	61%	98	49%	No
Planted new trees	78	57%	25	39%	103	51%	No

Table 20: Variety of cocoa tree planted							
Variety	Members		Non-		Totals		Stat. Sign.
Criollo	64	47%	19	30%	83	41%	No
Trinitario	2	1%	4	6%	6	3%	No
Forastero	3	2%	0	0%	3	1%	No
Other	12	9%	6	9%	18	9%	No

Only 17 respondents (8% of the total and 17% of those planting trees) reported planting more than 100 trees. The majority of those planting saplings in the last 12 months (63%) planted 50 or fewer. Nearly all of those planting more than 100 cocoa trees were Members of CAUD (Figure 19). Only 17 of the respondents said they had cut down any mature cocoa trees in the last five years. A Non-Member in Anse d'Hainault explained that healthy cocoa trees have too much value for farmers to cut them down except in extraordinary circumstances. "For a sickly cocoa tree, its branches need to be trimmed," she said, "but we never cut down a cocoa tree unless it's dead."

Figure 19: Number of respondents who Planted New Trees within the last 12 months (n=103)



7.7 Tree Maintenance

There was a marked difference between Members and Non-Members in one critical form of tree maintenance – cutting branches to allow sunlight into the garden (Table 21). Among Members, 95% (130 out of 137) said they cut cocoa branches in their groves, while only 23% (15) Non-Members did so. There was a less pronounced difference in the use of chemical fertilizer (1% of Members, 0% of Non-Members), and compost or manure (6% of Members, 2% of Non-Members).

Table 21: Tree maintenance practices (N=201)									
	Members				Non-Members				Stat. Sign.
Tree maintenance	Yes		No		Yes		No		Difference
Cut branches to allow light in	130	95%	6	4%	15	23%	50	78%	Yes
Used chemical fertilizer	2	1%	134	98%	0	0%	65	100%	No
Used compost or manure	8	6%	128	93%	1	2%	64	98%	No

In focus groups, several participants said they did not bother using any kind of fertilizer because their cocoa land was fertile, making fertilizer unnecessary. This was reflected in the data (Figure 20). Only 1% of all respondents reported using any kind of fertilizer in the last 12 months. Just 5% said they would have liked to have used chemical fertilizer, and 15% said they would have liked to have used organic fertilizer. Very few people reported having used other inputs as well, including seeds, rat traps or poison (rats eat ripening cocoa pods), and tools. Eighty-eight percent of respondents reported using none of these inputs in the past year. Thirty-three percent said they would have liked to have had seeds, 25% desired rat traps, 32% desired rat poison, and 38% wanted tools. The main reason cited for not acquiring desired inputs was a lack of money (57%, Figure 21).

Figure 20: Agricultural inputs actually used & desired in last 12 months (N=201)

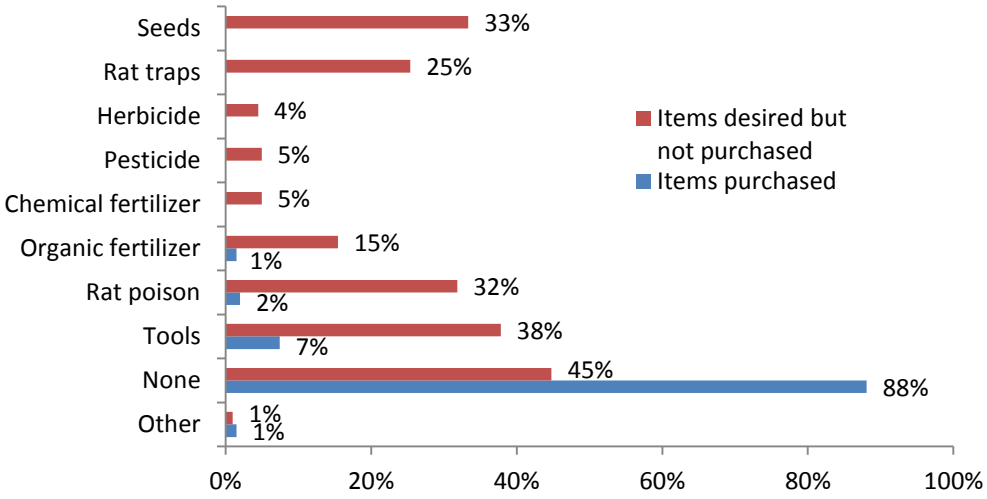
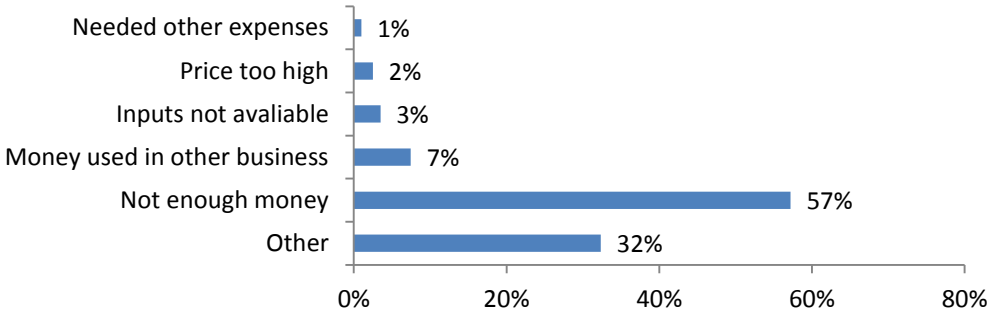


Figure 21: Reason for not purchasing agricultural Inputs needed for tree maintenance (N=201)



The strong desire expressed to purchase rat poison reflects the perception that rats, which eat ripening cocoa pods, are the most commonly cited threat to the cocoa harvest. Among all survey participants, rats were the only pest cited by 100% of respondents as one of the three biggest threats to the harvest. Forty percent cited beetles as the second most common threat.

8.0 Cocoa Production & Revenue

8.1 Production Increase

A narrow majority of respondents overall reported working the same amount of land planted in cocoa over the past two years (48% of Members; 63% of Non-Members). A significant minority, however, had increased the area planted in cocoa (Figure 22). Among Members, 43% said they had increased the area planted in cocoa, compared to 28% of Non-Members. Only 9% of both groups reported reducing the amount of cocoa land farmed., Members reported harvesting more cocoa over the last two years – 149 *mamit*, compared to 95 *mamit* for Non-Members (Figure 23) (A *mamit* holds 3.08 lbs. of dried cocoa; its contents weigh 4.6 lbs. if the cocoa is fresh and therefore wet).

Cacao Trinitario

Figure 22: Planting behavior over the past two years (N=201)

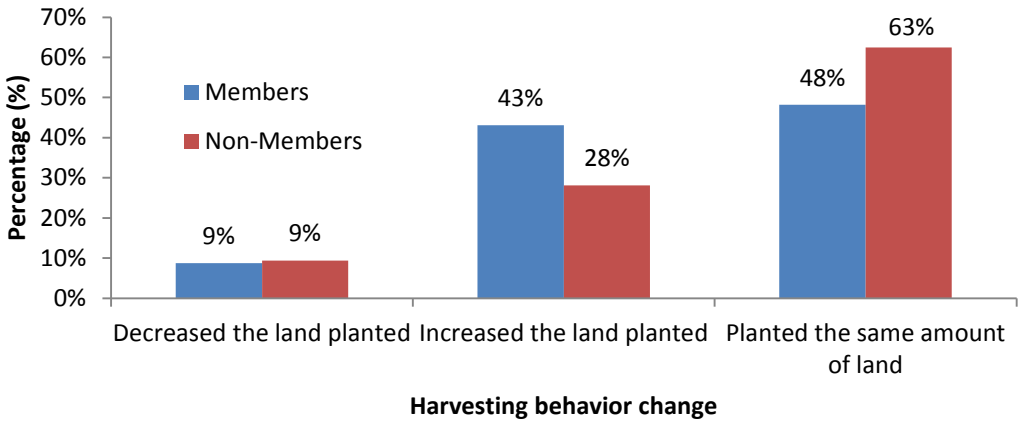
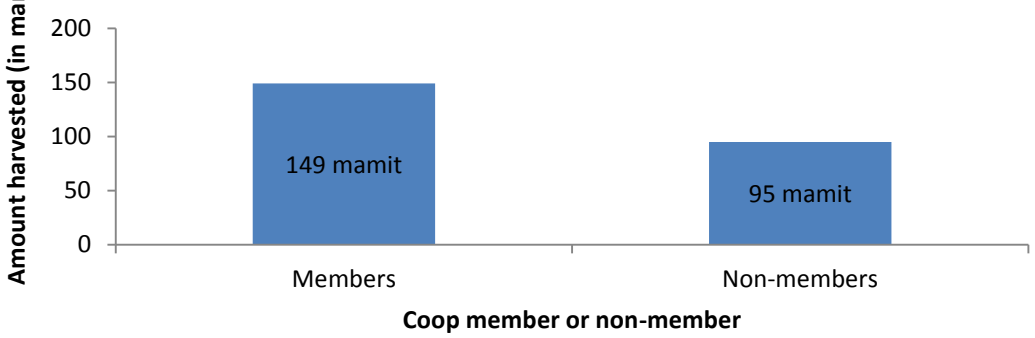


Figure 23: Amount of cocoa (in mamit) harvested in past 2 years in (N=201)

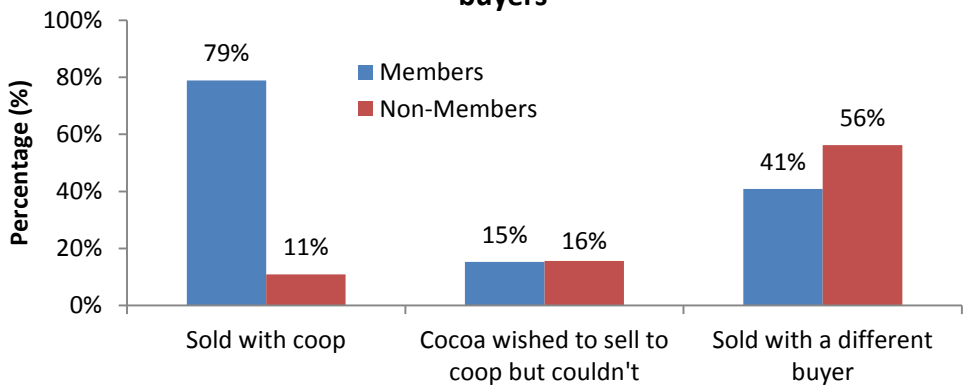


8.2 Quantity by Channel & Product

As shown in Table 24, 79% of the respondents who were CAUD Members sold cocoa to the cooperative in the last year, compared to just 11% of the Non-Members (Figure 24). Non-Members were more likely to have sold to other buyers (56%), but a significant minority of Members (41%) said that they had sold to other buyers, too. (The explanation for less than 100% of Non-Members who sold can likely be attributed to rental of cacao groves).

Speculator in Anse d'Hainault

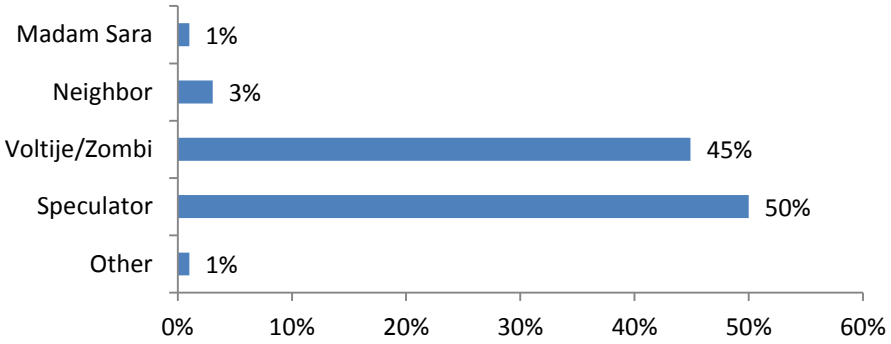
Figure 24: Cocoa sales to cooperatives and sales to other buyers



CAUD Members produced, on average, 202 *mamit* of cocoa over the last two years. Not all 137 of the Members surveyed sold to the cooperative (some said it was too far away for them to get fresh cocoa there on time), but the 108 who did reported selling 209 *mamit*, on average, to CAUD (suggesting some might have sold some cocoa purchased from others, as the amount sold narrowly exceeded the amount produced, and some also sold additional cocoa that had been dried to other buyers). Non-Members reported harvesting just 34 *mamit* over the same period, and selling just 14 *mamit* to the cooperative. It is difficult to draw conclusions from this sample, however, because only 7 of the 64 Non-Members sold to the cooperative over this period.

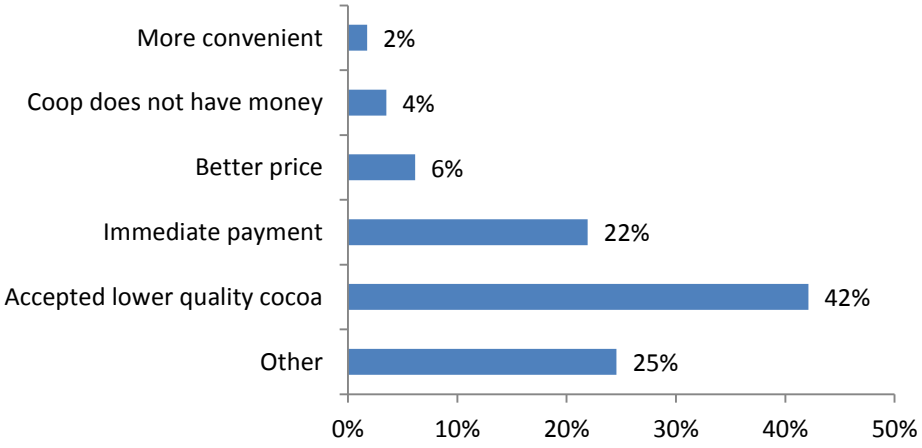
The most common type of non-cooperative buyer was the speculator – who purchases dry or semi-dry cocoa, fully dries it (for two to three days), then resells it to a larger buyer, typically Maison Weiner in Dame-Marie. Fifty percent of those selling to other buyers sold to speculators (Figure 25). The other significant type of non-cooperative buyer was the *voltije* or, in local vernacular, the zombie. This buyer is a man or woman – sometimes someone who also produces cocoa – who rises early and walks long distances into the countryside to purchase cocoa from growers who lack the quantity or time to travel long distances to sell to a speculator. The zombie then carries the cocoa home to further dry it, or, if it is already dry, takes it directly to a speculator to resell it at a profit. Forty-five percent of respondents who sold to someone other than the cooperative sold to zombies.

Figure 25: Breakdown of Non-Cooperative Buyers



Roughly the same percentage of Members and Non-Members (15% and 16%, respectively) said that they would have liked to have sold more to the cooperative (see Figure 24 above). Among those who sold to other buyers, the most common reason given was that the other buyer accepted lower quality cocoa than the cooperative (42%). This frequently means that the grower could not get the cocoa beans to the cooperative immediately after harvest, which is necessary for the cocoa to be fresh enough for purchase under CAUD's "La pou la" (Right Here, Right Now) program (nearly all of the cocoa sold to other buyers was dried and, therefore, not eligible for purchase at CAUD). Twenty-two percent cited immediate payment as their reason, while 6% said the other buyer offered a better price, and 4% said the cooperative did not have the money to purchase their harvest (Figure 26).

Figure 26: Reason for selling with other buyers

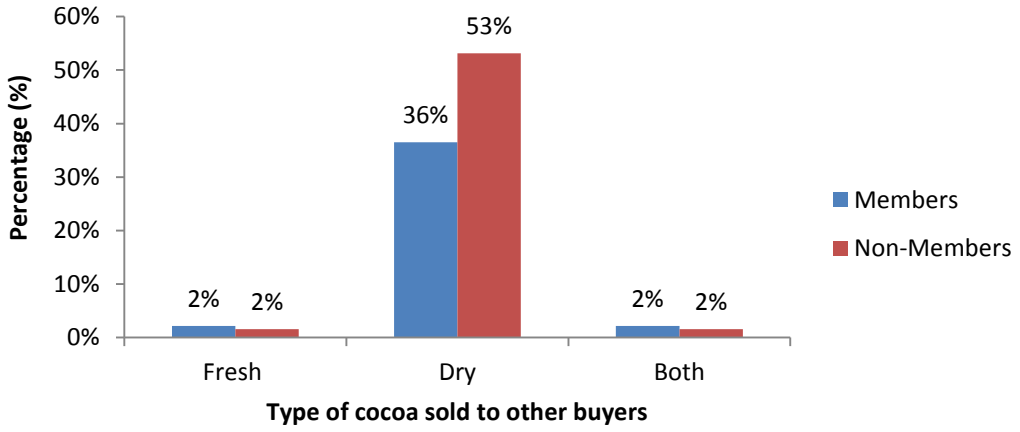


8.3 Revenue by Channel & Product

The average price respondents received from the cooperative for a *mamit* of fresh or green cocoa was 98 HTG, while the average received from other buyers for dried cocoa was 90 HTG. Those selling to other buyers sold smaller quantities than those selling to the cooperative, with average sales per farmer to other buyers of 53 *mamit*, compared to average sales of 198 *mamit* to the cooperative. Both the smaller quantities and lower prices are to be expected given that 45% of the other buyers were zombies (see Figure 25 above), who frequently purchase in small quantities and whose profit comes from the difference between the farmer's sale price and the speculator's purchase price, typically 100 HTG per *mamit* at the time of the research in August 2014.

Among Members who sold to other sellers (N=48), the average sold in the past two years was 65 *mamit*. Non-Members selling to other sellers (N=32) sold, on average, 36 *mamit*. Members selling to the cooperative reported selling 209 mamit, vs. 34 mamit sold by the average Non-Member selling to CAUD.

Figure 27: Percentage of households selling cocoa to other buyers by type (n=92)



The substantially higher volume and marginally higher prices reported by Members was reflected in higher income as measured by several data points. Members reported average income from cocoa of 4941 HTG in the last 12 months. Non-members reported average income from cocoa of 1895 HTG over the same period. It is difficult to assess the accuracy of these estimates. A similar divide exists according to calculations of income derived from reported sales.

Estimated Average Revenues are not necessarily representative of actual data. This is because revenues are a product of quantity and price and when average price and average quantity are used as inputs to calculate revenues the result may be misleading. For example, if a business sells 10

mamit units at $2.00 and sells 50 units at $1.00 its actual revenues are (10 x $2.00) + (50 x $1.00) = $70.00. However, if revenue is calculated using average units and average prices then the estimated average revenue may be misleading. For example: (($2.00 + $1.00)/2) x ((10 + 50)/2) = ($1.50) x (30) = $45.00. However, in the case of cocoa sales to the cooperative, the prices reported were consistent, so the data provide a reliable indication of relative income levels from the different sources. Reported sales to CAUD over the last two years amount to 20,545 HTG ($456.54) per Member selling to the cooperative (N=104). The Non-Members reporting sales of fresh cocoa to the cooperative received 1,225 HTG ($27.22). As stated above, only seven Non-Members reported selling to CAUD, so the sample is too small to be statistically significant. At the average reported price of 91.25 HTG per mamit, Members selling to other buyers (N=48) would have received 5,904 HTG ($131.20) for the average 65 mamit they sold to other buyers, while the corresponding Non-Members (N=32) would have received 3,153.75 HTG ($70.08) for the 36 *mamit* they sold at an average price of 87 HTG per *mamit*. The second payment or *ristoun*, which only cooperative Members selling to CAUD will receive adds to the income advantages of *Members* over *Non-Members*.

Members reporting income from cocoa production, estimated income from cocoa over the last 12 months averaged 4941.23 Haitian gourdes (HTG), or $109.81, while Non-Members put their cocoa income at 1895.12 HTG ($42.11). Members reporting income from agriculture put it at 4050.91 HTG ($100.91), while the corresponding Non-Members estimated their agriculture income at 3044.83 HTG ($67.66). Although considerably less than what would be expected from the figures of cacao sales to the cooperative seen above, they nevertheless appear consistent relative to one another in terms of cooperative members earning significantly more revenue than non-members

Table 22: Income over last 12 months (N=201)

	Members		Non-Members		
	HTG	USD	HTG	USD	Stat. Sig
Cocoa	4941.23	109.81	1895.12	42.11	No
Other Ag	4540.91	100.91	3044.83	67.66	Yes

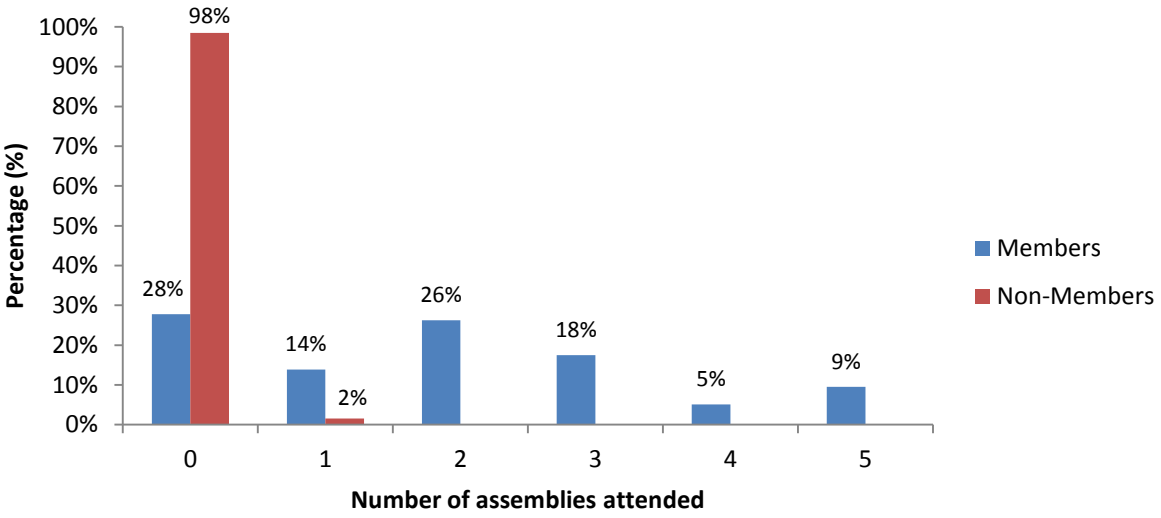
9.0 Relationship with Cooperative

9.1 General Assemblies

Of the 137 Members surveyed, 99 (72%) reported having attended at least one general assembly meeting (Figure 30). One Non-Member had attended a meeting. Out of the 100 people who had attended at least one meeting, 23 (23%) said they had spoken up and participated in discussions, while the rest had not. Female CAUD members who participated in the Dame-Marie focus group said they felt empowered to participate fully in the cooperatives meetings, and all other CAUD activities.

CAUD Cooperative Members drying Cacao

Figure 28: Number of last 5 assemblies attended (N=201)



9.2 Satisfaction with Cooperative

Sixty-four percent of Members responded as positively as possible about their satisfaction with the cooperative (Figure 32). Another 28% of Members reported that they are somewhat satisfied, the second most positive response available. Of the rest, 5% said they were neutral, and 5% were either somewhat or very dissatisfied. Among all survey participants, the principal benefits expected from the cooperative were as a source of advice (cited by 51% of respondents) and as a purchaser of cocoa (68%).

Figure 29: Time members have spent in coop (n=137)

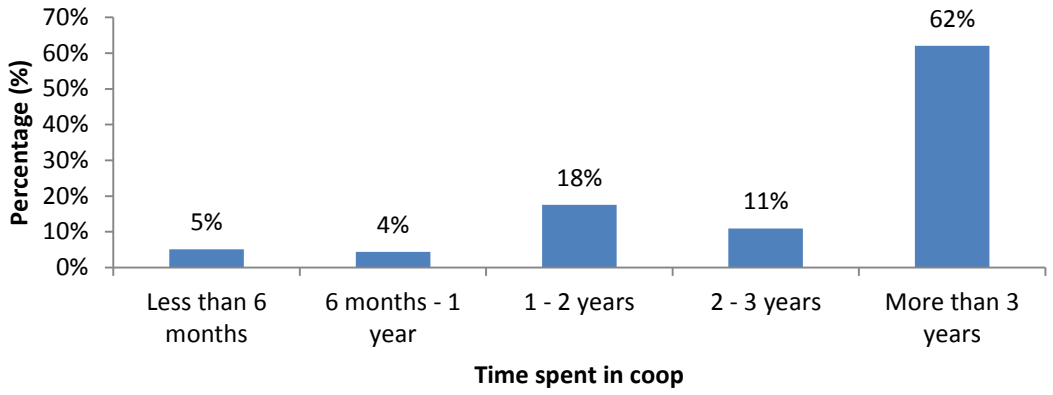


Figure 30: Satisfaction with cooperative (N=201)

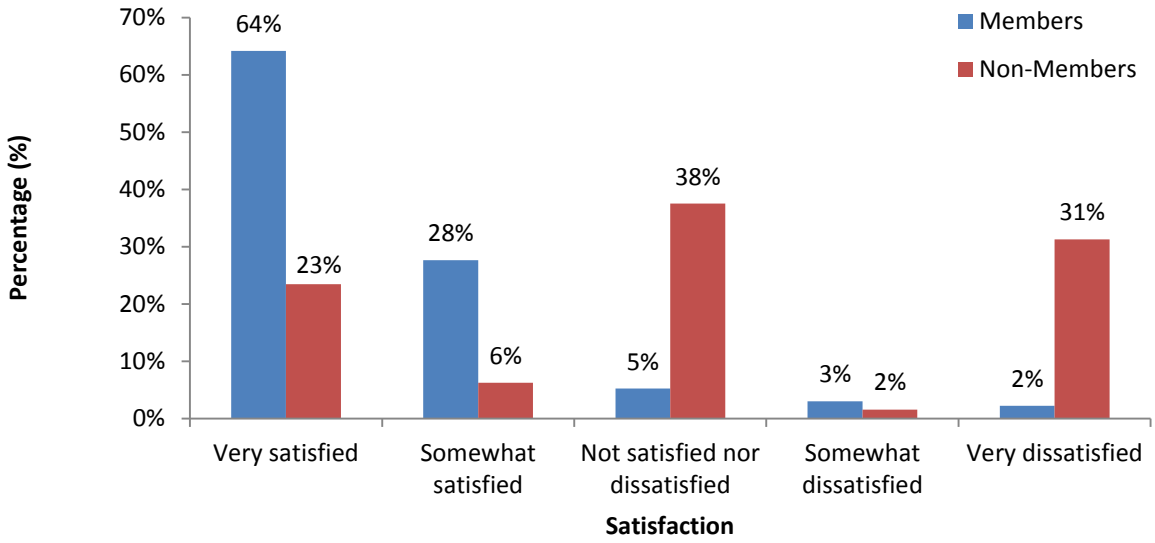
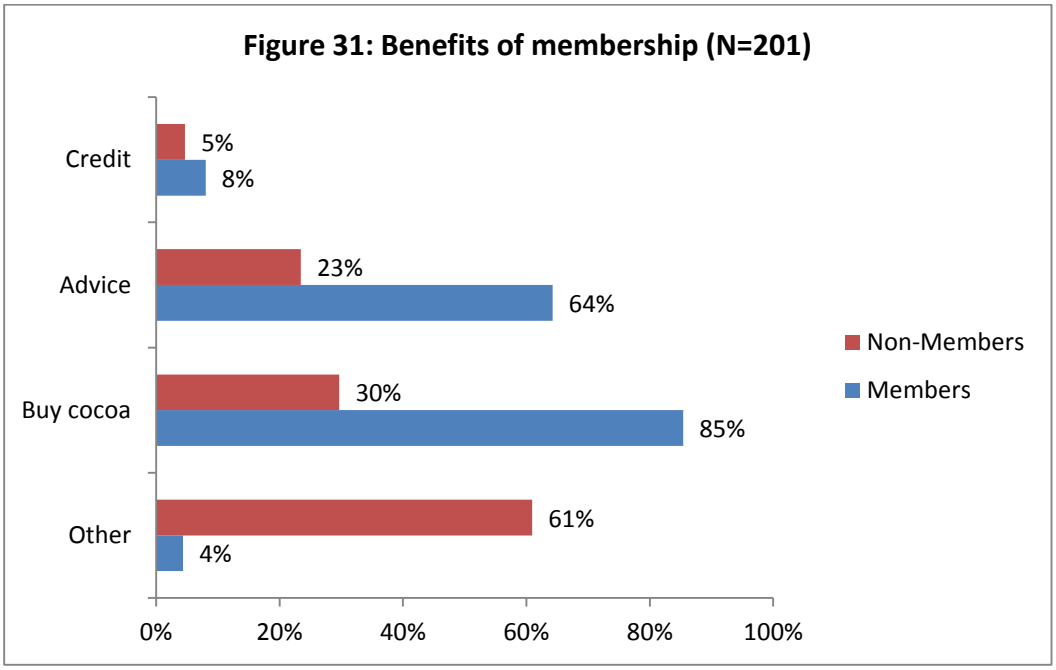


Table 23: Satisfaction with cooperative (N=201)					
	Members		Non-		Stat. Sign.
Very satisfied	86	64%	15	23%	Yes
Somewhat satisfied	37	28%	4	6%	Yes
Not satisfied nor	7	5%	24	38%	Yes
Somewhat dissatisfied	4	3%	1	2%	No
Very dissatisfied	3	2%	20	31%	Yes

Perceptions of the benefits of cooperative membership differed sharply between *Members* and *Non-Members*. Most of the difference appears due to the *Non-Members'* lack of familiarity with cooperative operations (Figure X). Eight percent of *Members* said the availability of credit was a prime benefit of cooperative membership, vs. 5% of *Non-Members*. Sixty-four percent of *Members* said the cooperative provided them with valuable advice, while 23% of *Non-Members* cited advice as a benefit of cooperative membership. Eighty-five percent of *Members* said they benefitted from the cooperative because it purchased their cocoa; 30% of *Non-Members* cited the purchasing of cocoa as a benefit provided by cooperatives. The most common response from *Non-Members* was "other," and when asked to explain the *Non-Members* said they could not name benefits of cooperatives because they did not belong to one and were therefore unaware of the advantages of membership. Similarly, none of the *Non-Members* reported that they could respond to questions regarding their comfort speaking in meetings or participating in group activities because they had never attended cooperative meetings or participated in cooperative training or other activities.



Members and *Non-Members* alike expressed a strong desire to continue growing cocoa. Ninety-nine percent of Members and 95% of *Non-Members* said they hoped they would still be involved in cocoa cultivation in five years. *Members* and *Non-Members* also cited similar factors when asked what the cocoa business needed in order to improve. Higher prices were named as a primary need by 26.28% of *Members* and 32.81% of *Non-Members* (28.36% of all 201 respondents), while the general need for aid (sometimes specified as government aid) was cited by 27.01% of *Members* and 28.13% of *Non-Members* (27.36% of all respondents). Training, inspections, and other technical support were cited by 18.25% of *Members* and 12.50% of *Non-Members* (16.42% of the total), while materials such as tools, fertilizer, and insecticide were cited by 10.22% of *Members* and 6.25% of *Non-Members* (9.99% of respondents overall).

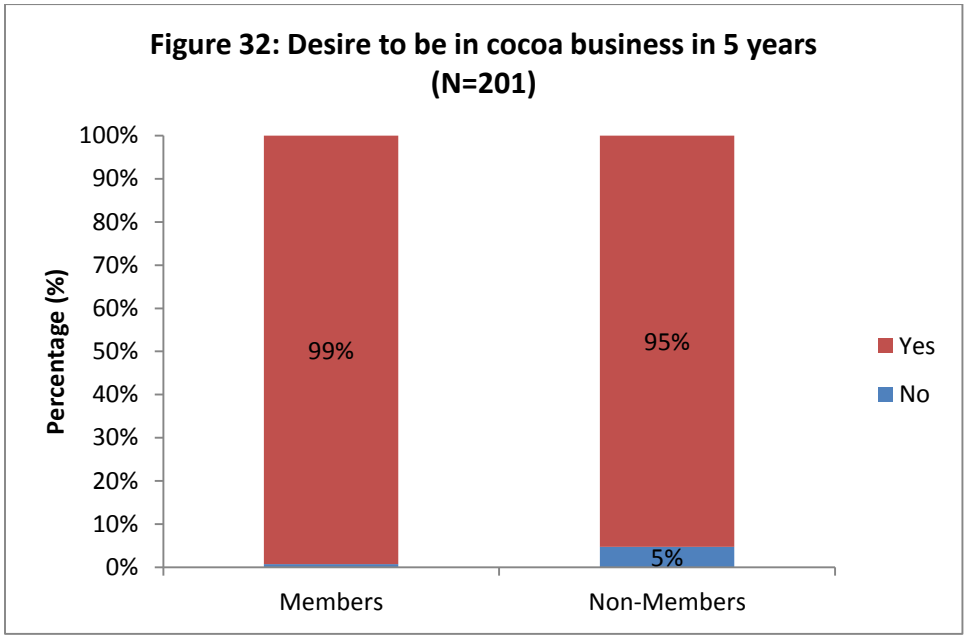


Table 24: Cocoa producer needs			
Need	Members (n=137)	Non-Members (n=64)	Total (N=201)
Higher prices	26.28%	32.81%	28.36%
Aid	27.01%	28.13%	27.36%
Training	18.25%	12.50%	16.42%
Tools, fertilizer	12.41%	6.25%	9.95%
Money	10.22%	6.25%	8.96%
Land/garden repair	3.65%	1.56%	2.99%
Importance	1.46%	4.59%	2.49%
Personal strength	1.46%	6.25%	2.49%
Make it better	0.73%	-	0.50%
Nothing	-	1.56%	0.50%
Agreement	0.73%	-	0.50%

10.0 Conclusion: Indicators

Although both groups are enthusiastic about cocoa production, *cooperative* Members own and work more land, and have access to larger areas planted with cocoa trees. Consequently, Members derive a greater portion of their income from cocoa production. Forty-five percent of Members get more than half of their cash income from cocoa, compared to just 14% of Non-Members.

While there is the possibility that the cooperative is the cause of the socio-economic higher standing of its' members vis a vis non-members, more likely is that members were better off to start with. In rural Haitian individuals of higher socio-economic standing have long dominated access to development organizations and cooperatives .Moreover, the dependence on cocoa as a source of household income may have a "self-selection effect" that attracts only serious cocoa growers to the cooperative, or that causes only serious cocoa growers to be admitted into the CAUD community. It also means, or at least the data seems to support, that cooperative members tend to be wealthier, better educated, and with access to great resources, all of which means that a random control group cannot be used to directly gauge the impact of the Root project. What can be done is that change in cooperative member behavior and socio-economic status can be measured and compared to changes in the status of non-members.

The sample of Members was skewed by gender, with 73% of respondents from this group being men, and 27% women. Members who participated in the Dame-Marie focus group noted that there were no women in leadership positions in the cooperative, although they perceived no obstacles to their full participation in the cooperative. Sixty-seven percent of Members were 46 years of age or older. This suggests that the potential exists to attract women and young adults into the activities of the cooperatives, which would benefit households throughout the community by preserving and even enhancing the role of women and youth in the cocoa market chain.

Socio-Dig Supervisor Emile Pharrel at CAUD Cooperative with pile of cacao beans

10.1 A proposed list of indicators for End-line Survey

a) Cooperative Indicators

1. Export volumes
2. Increase of revenue generated through the sale of cacao
3. Overall turnover of the businesses in export quality cacao, before and after
4. Number of sellers
5. Number of members
6. Members satisfaction with cooperative
7. Number of women included in the board
8. Number of female members

b) Proxy Economic Indicators

1. Change in income from other sources
2. Change in area dedicated to crops other than cacao
3. Change in food security—months that household had trouble feeding itself
4. Change in proportion of households in which someone owned at least one pig
5. Change in proportion of households in which someone owned a radio
6. Change in roof type
7. Change in floor type
8. Change in proportion of children 6 to 14 years of age enrolled in school
9. Age of producers / number of members under 40 years of age

c) Cacao indicators

1. Change in total area of the farm
2. Change in proportion of land dedicated to cacao
3. Change in number of cacao plants
4. Change in seedlings planting
5. Change in pruning and maintenance habits
6. Change in pest control practices
7. Change in kilograms of cacao produced (per member)
8. Change in amount sold to cooperative
9. Change in price sold to the coop
10. Change in amount sold to other buyers
11. Change in price sold to other buyers
12. Change in percentage of seller population that received a *ristoun*
13. Change in TOTAL household income came from cacao
14. Change in proportion of household income from cacao

d) Gender Indicators

1. Change in proportion of single household heads
2. Change in proportion of women participating in production, harvesting, selling, and decision making

11.0 Appendix

11.1 Business questionnaire Survey Cocoa production Dame Marie CAUD

1. Identification

Name of cooperative: Cooperative Agricole Union et Développement (CAUD)
Locality: Dame Marie
GPS coordinate:
Number of members: 776 and growing.
2013 harvest production delivered:667 bags of 132 lbs fermented @ 46,25 HTG/lbs
Board members (For each member)
President:
External support : Which organizations/funds support your Network (Names and contact persons)
CRS: Jean Chariot Chef de projet, Dame Marie.
FESMA Dame Marie (Construction of fermentation boxes.)
Root Capital: Trade credit (Patrick Dessources)
Kaleos: Client and financial supporter (Drying tunnels, equipment, training…) Jacquelin Calixte.
CARE International: Agricultural tools supply. Irregular supply of spades, machetes, picks and other agricultural tools for our members.

Name	Age	Sex	Education	Position	Other occupation
Gestner	76	M	2e année	President	Retired agricultor
François Jean Mary	54	M	3e secondaire	Vice président	Teacher
Forestal Jean Frido	57	M			
Antoine Saint Louis		M		Conseiller	
Louima Banny		F		Conseiller	
Ludovic Loiseau		F		Conseiller	
Cebien Frederic		M		Secrétaire	
Mireille Demostène		F	Rétho	Secrétaire ajnt	
Germaine Michel		F		Conseiller	

2. Assets

(Visit the assets and verify)
What housing does the business own:
Glacis: 2 existing glacis. An extension is under construction on 5000m2 plot.
Equipped sun dryer :1 sun drying tunnel equipped with tables.
Fermentation boxes : 22 fermentation boxes of approx. 1 m3
Store: (Evaluate capacity in bags): 300 to 400 bags storage capacity.
Office: None
What equipment does the business own: *(Same control of tools)*

Computer and internet access:	No	
Scale:	Yes	1
Humidity tester:	Yes	1
PH meter	Yes	1
Palettes for storage	Yes	No number
Generator	Yes	1
Vehicle for transport	No	
Motorbikes	No	

Agricultural tools (Rake, spades, pruning sheers...) not in store.

3. Business management capacity

During the business interview it is important to prepare the board in advance so that they can bring all their books at the meeting. All questions about Membership, production assets etc refer to past year (2013)

3.1 Existing records:

3.1.1 List of members:

776 members recorded in August 2014 (Over 1200 suppliers)

Yes : does the list record (Tick)	
Name	Y
Locality	Y
Contact Number	N
Sex	Y
Age	N

No List

3.1.2 Accounting books :

Yes : Do you have	
Cash book	Y
Operating account	Y Unibank Jeremie.
Balance sheet	Y

No

3.1.3 Production (All questions relate to last year's harvest)

Do you have production records books for last year's harvest ?

Production books	Not produced
Total beans purchased in 2013 (Marmites)	-
Total dried beans produced in 2013 (Lbs or Kg)	128 779 Lbs
Total beans sold for export in 2013 (Lbs)	88 704 Lbs
Total beans sold locally in 2013 (Lbs)	5 958 Lbs

3.1.4 Do you have a Nursery ? *(Nursery visit)*

Yes ... Since (Year)	No
Last year: Total seedling produced (Numbers)	0
Total seedling distributed (Sold)	0
Varieties produced in the nursery	0

3.1.5 Do you sell farm inputs *(Store visit)*	*No*
Fertilizers	
Pesticides	
Rat traps	
Tools	

3.2 Financials

What was you turnover in 2013	4 112 056,0 HTG
What were your costs in 2013	3 695 090,5 HTG
Cost of sales (purchases)	2 824 590,5 HTG
Personnel	265 650 HTG
Manutention/temporary personnel	205 515 HTG
Bags and accessories	366 485 HTG
Transport of personnel	26 750 HTG
Meetings and trainings	--
Facilities Maintenance	6 200 HTG
Bonus for board members	72 500 HTG
Second payment supplier	484 560 HTG

3.3 Marketing

Who are your current buyers ?	KALEOS France

4. Perception

What would you like to improve in priorities ?

Production area	
Drying	Extend for 3 more drying tunnels
Fermentation	Double our capacity
Storage	1000 bags storage necessary.
Office space and meeting room	For members meetings.
Farmers Training	
Agricultural	Not planned
Harvest management	
Access to farm input	
Fertilizers	Not planned
Pesticides	
Tools	
Seedlings	

Marketing	
Access to international market	Not planned
Transformation facilities	No

5. Main agricultural problem declared by most farmers to the board:
Rats and birds eating the pods. Before it was sort of overlooked but witht he cash for fresh system each pod is seen as cash, and the rats are becoming a real nuisance.

Phyto-sanitary problems are not well mastered and most farmers know about the root rots and other diseases but do not see them yet as real threats.

11.2 Contacts and Interviews

Gesner LaGuerre, president CAUD	36542837
Forestal Jean Frido	37372451/32925150
Jean-Marie Francois, vice president CAUD	3608 0667
Spencer Cesar, fermentation manager, CAUD	3642-6442
Mireille Demosthene, adjunct secretary, CAUD	3625-8098
Jean-Antoine Pierre, speculator Anse d'Hainault	3813-0643
Dady Cadet, owner defunct fermentation facility, Anse d'Hainault	3860-3727
Rochelin Dilien, zombi, Anse d'Hainault	4610-6705
Jean-Chariot Michel, CRS	

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Le Nouvelliste 2014 Dame-Marie fête le cacao! Le Nouvelliste | Publié le : 29 avril 2014
http://lenouvelliste.com/lenouvelliste/article/130396/Dame-Marie-fete-le-cacao.html

END NOTES

[i] Jean-Marie François – Board Member Member for 20 years, he teaches in a private, elementary level academic institution. Brother Gesnert – President He's held the presidency of the cooperative for nearly 20 years

[ii]

Table EN1: Demo Indicators					
	Members (n = 137)				
				ci (p>95%)	
	P	p-1	SE	ci lower limit	ci upper limit
% HHs adding a person in past year	4%	0.96	0.02	0.01	0.07
% HHs with someone who left	20%	0.8	0.03	0.13	0.27
Average Household size	5.7	-	0.20	5.35	6.14
# Children 18 or under	2.3	-	0.14	1.99	2.56
	Non-Members (n = 64)				
				ci (p>95%)	
	P	p-1	SE	ci lower limit	ci upper limit
% HHs adding a person in past year	0%	1	0.00	0.00	0.00
% HHs with someone who left	17%	0.83	0.03	0.11	0.23
Average Household size	5.6	-	0.34	4.93	6.29
# Children 18 or under	3.1	-	0.38	2.35	3.87

[iii]

Table EN2: Household Heads					
	Non Member				
	Non-coop	p-1	se	ci lower	ci upper
Single female	0.22	0.78	0.05	0.12	0.32
Single male	0.14	0.86	0.04	0.05	0.23
Single male or female	0.36	0.64	0.06	0.24	0.48
Male and Female	0.64	0.36	0.06	0.52	0.76
	Member				
	Coop	p-1	se	ci lower	ci upper
Single female	0.16	0.78	0.04	0.15	0.29
Single male	0.12	0.86	0.03	0.08	0.20
Single male or female	0.28	0.64	0.04	0.28	0.44
Male and Female	0.72	0.36	0.04	0.56	0.72
	Total				
	total	p-1	se	ci lower	ci upper
Single female	0.18	0.82	0.03	0.11	0.24
Single male	0.13	0.87	0.03	0.07	0.19
Single male or female	0.31	0.69	0.04	0.23	0.39
Male and Female	0.69	0.31	0.04	0.61	0.77

iv

Table EN3: Income from major sources										
Members (N=137)										
	n=	USD	Total	mean	sum sq'd	sum sqs	sd	se	upper ci	lower ci
Agriculture	121	$100.91	12210.11	89.12	79.61	6338.18				
Cocoa	106	$109.81	11639.86	84.96	70.10	4913.91				
Livestock	93	$138.12	12845.16	93.76	34.15	1166.36				
Trade	32	$156.18	4997.76	36.48	32.36	1046.85				
Charcoal	18	$34.67	624.06	4.56	4.00	16.01				
Coffee	11	$25.05	275.55	2.01	1.93	3.71				
Manual labor	7	$431.75	3022.25	22.06	26.12	682.00				
Fishing	4	$236.11	944.44	6.89	5.37	28.85				
Skilled labor	4	$177.78	711.12	5.19	6.70	44.95				
Total			345.04	345.04	67775.47	14240.81	231	19.	305.	384.5
Non-Members (N=64)										
	n=	USD	Total	mean	sum sq'd	sum sqs	sd	se	upper ci	lower ci
Agriculture	58	$67.66	3924.28	61.32	77.25	5967.37				
Cocoa	42	$42.11	1768.62	27.63	52.66	2773.50				
Livestock	44	$72.73	3200.12	50.00	35.73	1276.59				
Trade	6	$70.37	422.22	6.60	12.31	151.47				
Charcoal	4	$37.50	150.00	2.34	2.06	4.24				
Coffee	9	$25.56	230.04	3.59	3.14	9.87				
Manual labor	1	$1,066.67	1066.67	16.67	9.49	90.07				
Fishing	5	$142.22	711.10	11.11	9.66	93.26				
Skilled labor	2	$333.33	666.66	10.42	7.18	51.49				
Total			189.68	189.68	43879.25	10417.87	182	15.	158.	220.9

v

Table EN4: Remittances and salaried employment					
Members					
Variable	p	p-1	sd	ci lower limit	ci upper limit
Person in household has salaried employment	0.09	0.91	0.02	0.04	0.14
Household receives remittances from abroad	0.15	0.85	0.03	0.09	0.21
Non-Members					
Variable	p	p-1	sd	ci lower limit	ci upper limit
Person in household has salaried employment	5%	0.95	0.02	0.01	0.09
Household receives remittances from abroad	3%	0.97	0.01	0.00	0.06

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Table EN5: Children in School					
Variable	p	p-1	sd	ci lower limit	ci upper limit
Members	0.02	0.98	0.01	0.00	0.05
Non members	0.03	0.97	0.01	0.00	0.06
Total	0.02544	0.97	0.01	0.00	0.05

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Table EN6 Person in House Owns a Pig					
Variable	*P*	*p-1*	*sd*	*ci lower limit*	*ci upper limit*
Members	*0.47*	*0.53*	*0.04*	*0.38*	*0.55*
Non Members	*0.34*	*0.66*	*0.04*	*0.26*	*0.42*
Total	*0.43*	*0.57*	*0.04*	*0.34*	*0.51*
Table 7: Radio in House					
Variable	*p*	*p-1*	*sd*	*ci lower limit*	*ci upper limit*
Members	*0.58*	*0.42*	*0.04*	*0.50*	*0.67*
Non Members	*0.27*	*0.73*	*0.04*	*0.19*	*0.34*
Total	0.48	0.52	0.04	0.40	0.57

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Table EN8: Floor and Roof Construction						
		Members (n = 137)				
					ci (p>95%)	
		p	p-1	sd	ci lower	ci upper
Floor	Dirt	0.43	0.57	0.04	0.35	0.51
	Cement/concrete/tile	0.57	0.43	0.04	0.49	0.65
	Tin	0.81	0.19	0.03	0.74	0.88
	Thatch	0.12	0.88	0.03	0.06	0.18
	Plastic	0.01	0.99	0.01	-0.01	0.03
Roof	Concrete	0.05	0.95	0.02	0.01	0.09
		Non-Members (n = 64)				
					ci (p>95%)	
		p	p-1	sd	ci lower	ci upper
Floor	Dirt	0.75	0.25	0.04	0.68	0.82
	Cement/concrete/tile	0.25	0.75	0.04	0.18	0.32
	Tin	0.80	0.2	0.03	0.73	0.87
	Thatch	0.08	0.92	0.02	0.03	0.13
	Plastic	0.09	0.91	0.02	0.04	0.14
Roof	Concrete	0.03	0.97	0.01	0.00	0.06

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Table EN9: Respondent Reported that HH had Difficulty Accessing Food at some Point During the Last 12 Months (p > 95%)					
Variable	p	p-1	sd	ci lower limit	ci upper limit
Members	0.76	0.24	0.04	0.69	0.83
Non members	0.91	0.09	0.02	0.86	0.96

x

Table EN10: Months which respondents had most difficulty accessing food	Members (n = 137)		Non-Members (n= 64)	
All months	6	4%	1	2%
January	0	0%	1	2%
February	2	1%	6	9%
March	26	19%	27	42%
April	19	14%	18	28%
May	25	18%	14	22%
June	55	40%	21	33%
July	29	21%	11	17%
August	7	5%	10	16%
September	7	5%	9	14%
October	1	1%	5	8%
November	2	1%	3	5%
December	4	3%	1	2%

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Table EN11: Education levels of respondents					
				member	
	p	p-1	se	ci lower limit	ci upper limit
No school	28%	0.72	0.04	0.20	0.36
1st grade through 6th grade	54%	0.46	0.04	0.45	0.63
7th grade through 13th grade	17%	0.83	0.03	0.11	0.23
University or professional school	1%	0.99	0.01	-0.01	0.03
				non member	
	p	p-1	se	ci lower limit	ci upper limit
No school	41%	0.59	0.04	0.33	0.49
1st grade through 6th grade	45%	0.55	0.04	0.36	0.54
7th grade through 13th grade	12%	0.88	0.03	0.06	0.18
University or professional school	2%	0.98	0.01	0.00	0.04

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Table EN12: Loans

Members

Variable	p	p-1	sd	ci lower limit	ci upper limit
Family, Friend, Patron	0.12	0.88	0.03	0.06	0.18
NGO	0.00	1.00	0.00	0.00	0.00
Local Association	0.015	0.99	0.01	-0.01	0.04
Kes Popile	0.05	0.95	0.02	0.01	0.09
Fonkoze	0.015	0.99	0.01	-0.01	0.04
Sogesol	0	1.00	0.00	0.00	0.00
Other	0.015	0.99	0.01	-0.01	0.04
Total	0.22	0.78	0.04	0.15	0.29

Non Members

Variable	p	p-1	sd	ci lower limit	ci upper limit
Family, Friend, Patron	0.05	0.95	0.02	0.01	0.09
NGO	0.015	0.99	0.01	-0.01	0.04
Local Association	0.015	0.99	0.01	-0.01	0.04
Kes Popile	0.00	1.00	0.00	0.00	0.00
Fonkoze	0.015	0.99	0.01	-0.01	0.04
Sogesol	0.031	0.97	0.01	0.00	0.06
Other	0	1.00	0.00	0.00	0.00
Total	0.13	0.87	0.03	0.07	0.19

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Table EN13: Land

	Members (n = 137)			ci (p>95%)	
	p	p-1	SE	ci lower limit	ci upper limit
Av. quantity of land	1.50		0.13	1.23	1.76
Av. quantity of land worked	1.18		0.11	0.95	1.40
Av. quantity of land with cocoa	1.27		0.10	1.06	1.48
	Non-Members (n = 64)			ci (p>95%)	
	p	p-1	SE	ci lower limit	ci upper limit
Av. quantity of land	1.36		0.24	0.87	1.85
Av. quantity of land worked	1.02		0.20	0.62	1.42
Av. quantity of land with cocoa	0.80		0.17	0.46	1.13

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Table EN14: Tree Planting					
				Members (n = 137)	
				ci (p>95%)	
	p	p-1	SE	ci lower limit	ci upper limit
Didn't plant new trees	0.43	0.57	0.04	0.35	0.51
Planted new trees	0.57	0.43	0.04	0.49	0.65
				Non-Members (n = 64)	
				ci (p>95%)	
	p	p-1	SE	ci lower limit	ci upper limit
Didn't plant new trees	0.61	0.39	0.06	0.49	0.73
Planted new trees	0.39	0.61	0.06	0.27	0.51

xv

Table EN15: Cacao Tree Varieties					
				Members (n = 137)	
				ci (p>95%)	
	p	p-1	SE	ci lower limit	ci upper
Criollo	0.47	0.53	0.04	0.38	0.56
Trinitario	0.01	0.99	0.01	-0.01	0.03
Forastero	0.02	0.98	0.01	0.00	0.04
Other	0.09	0.91	0.02	0.04	0.14
				Non-Members (n = 64)	
				ci (p>95%)	
	p	p-1	SE	ci lower limit	ci upper
Criollo	0.30	0.70	0.06	0.19	0.41
Trinitario	0.06	0.94	0.03	0.00	0.12
Forastero	0.00	1.00	0.00	0.00	0.00
Other	0.09	0.91	0.04	0.02	0.16

xvi

Table EN16: Pruning					
				Members (n = 137)	
				ci (p>95%)	
	p	p-1	SE	ci lower limit	ci upper limit
Cut branches to allow light in	0.95	0.05	0.02	0.91	0.99
Used chemical fertilizer	0.01	0.99	0.01	-0.01	0.03
Used compost or manure	0.06	0.94	0.02	0.02	0.10
				Non-Members (n = 64)	
				ci (p>95%)	
	p	p-1	SE	ci lower limit	ci upper limit
Cut branches to allow light in	0.23	0.77	0.05	0.12	0.34
Used chemical fertilizer	0.00	1.00	0.00	0.00	0.00
Used compost or manure	0.02	0.98	0.02	-0.02	0.06

[xvii]

Table EN18: Income from Cacao vs Other Ag.			
Members (n = 137)			
		ci (p>95%)	
Average	SE	ci lower limit	ci upper limit
4540.91	387.16	3766.58	5315.24
4941.23	427.86	4085.51	5796.95
Non-Members (n = 64)			
		ci (p>95%)	
Average	SE	ci lower limit	ci upper limit
3044.83	502.90	2039.04	4050.63
1895.11	270.16	1354.79	2435.43

[xviii]

Table EN19: Cooperative Satisfaction					
			Members (n = 137)		
				ci (p>95%)	
	p	p-1	SE	ci lower limit	ci upper
Very satisfied	0.64	0.36	0.04	0.56	0.72
Somewhat satisfied	0.28	0.72	0.04	0.20	0.36
Not satisfied nor	0.05	0.95	0.02	0.01	0.09
Somewhat dissatisfied	0.03	0.97	0.01	0.00	0.06
Very dissatisfied	0.02	0.98	0.01	0.00	0.04
			Non-Members (n = 64)		
				ci (p>95%)	
	p	p-1	SE	ci lower limit	ci upper
Very satisfied	0.23	0.77	0.05	0.12	0.34
Somewhat satisfied	0.06	0.94	0.03	0.00	0.12
Not satisfied nor	0.38	0.62	0.06	0.26	0.50
Somewhat dissatisfied	0.02	0.98	0.02	-0.02	0.06
Very dissatisfied	0.31	0.69	0.06	0.19	0.43