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Food and nutrition security

Bymolt, R., Laven, A., Tyszler, M. (2018). Demystifying the cocoa sector in Ghana and Côte d'Ivoire. Chapter 4, Food and nutrition security. The Royal Tropical Institute (KIT).



Food and nutrition security is a central issue in the lives of cocoa farmers and their families. It is therefore important to understand the food and nutrition situation of households in Ghana and Côte d'Ivoire, and to identify possible synergies and trade-offs between the production of cocoa and food and nutrition security.^{1,2}

4.1 Food security

Many studies have highlighted the fact that food insecurity is a typically seasonal phenomenon. The main cocoa harvest from around October to January is associated with a period in which households have relatively more money and relative food security. However, in the middle of the year, around June and July, cocoa households face greater risk of becoming food insecure.^{3,4,5}

In our household survey, respondents were asked food consumption questions to better understand how patterns changed throughout the year. All respondents were asked, 'How many meals did you usually consume per day both at home and on the farm?' for each month of the year.

This question had to be relatively simple because respondents had to recall this information from the past year.⁶ We certainly accept that these basic survey questions on household food consumption do not provide a detailed description of 'food security'. Whilst, there are several reputable food security survey modules available, they all had certain drawbacks for this study. For example, some involve a long set of questions that we could not accommodate due to time constraints,⁷ while others limit their recall period to the past four weeks,⁸ rather than the past year.

One obvious limitation of our approach is that we have not captured how the serving size or quality of household meals changes throughout the year. Households may choose to continue consuming three meals per day through the year, but could reduce

¹ Anderman, T.L., Remans, R., Wood, S.A., DeRosa, K., DeFries, R. (2014) Synergies and tradeoffs between cash crop production and food security: a case study in rural Ghana. Springer Science + Business Media Dordrecht and International Society for Plant Pathology 2014. Available at <https://static1.squarespace.com/static/53ea24a8e4b0b0caeccc2efb/t/53eb6733e4b004775184e690/1407936307556/Anderman+et+al+%28Food+Sec+2014%29.pdf>

² Kenkhuis, M. (2016). Nutritional status among cocoa farming families and underlying causes in Ghana. Student Nutrition and Health at Wageningen University, intern at GAIN. Global Alliance for Improved Nutrition. Available at <http://www.gainhealth.org/wp-content/uploads/2017/03/Desk-research-Ghana.pdf>

³ Nestlé (2017) Findings from Nestlé Rural development Framework (RDF) baselines in 2013. Power point presentation, Living Income Community of Practice, Nov 2017-Berlin.

⁴ De Vries, K. (2015). Could nutrition sensitive cocoa value chains be introduced in Ghana? Report of a brief study that identifies opportunities and bottlenecks. Centre for Development Innovation, Wageningen UR (University & Research centre). Report CDI-15-105. Wageningen. Available at <http://edepot.wur.nl/364252>

⁵ Kenkhuis, M. (2016). Nutritional status among cocoa farming families and underlying causes in Ghana. Student Nutrition and Health at Wageningen University, intern at GAIN. Global Alliance for Improved Nutrition. Available at <http://www.gainhealth.org/wp-content/uploads/2017/03/Desk-research-Ghana.pdf>

⁶ These questions been successfully employed by the researchers in other household surveys.

⁷ Moltedo, A., Troubat, N., Lokshin, M., Sajaia, Z. (2014). Analyzing Food Security Using Household Survey Data : Streamlined Analysis with ADePT Software. Washington, DC: World Bank. Available at <https://openknowledge.worldbank.org/handle/10986/18091>

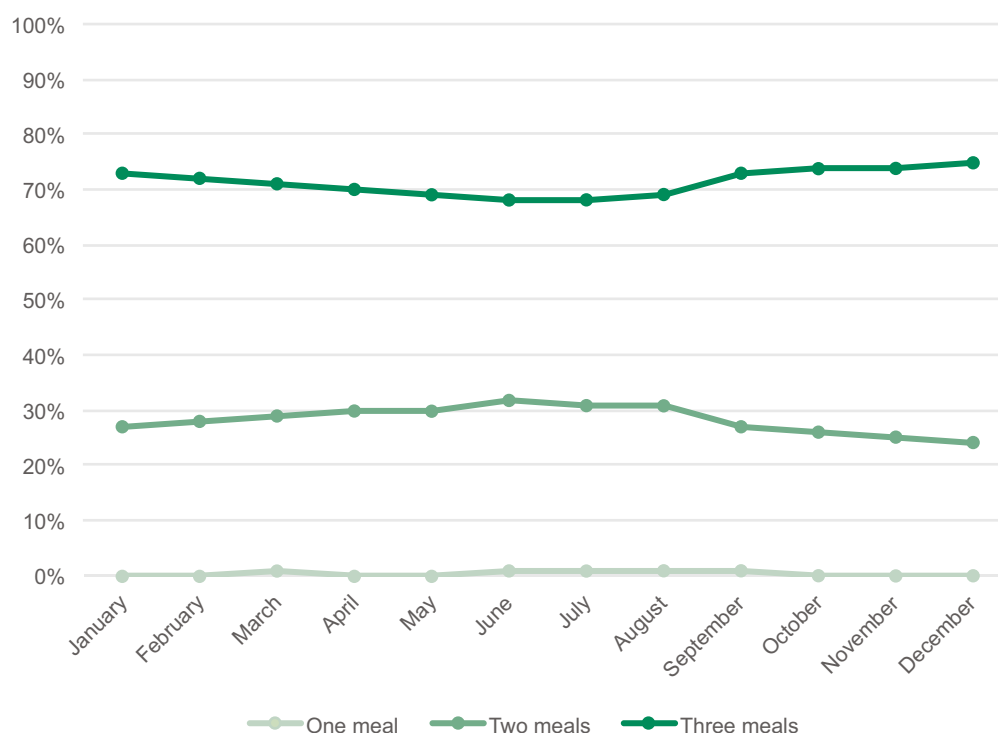
⁸ Coates, J., Swindale, A., Bilinsky, P. (2007). Household Food Insecurity Access Scale (HFIAS) for Measurement of Food Access: Indicator Guide. Version 3. FANTA food and nutrition technical assistance. Available at https://www.fantaproject.org/sites/default/files/resources/HFIAS_ENG_v3_Aug07.pdf

their calorie intake. Furthermore, the number of meals consumed does not capture how dietary diversity changes throughout the year. To have a detailed understanding of food security, a more intensive set of questions would need to have been included in the survey.⁹ However, due to the wide scope of the research and length of the survey, we chose to take a different approach. Availability and affordability of food groups were discussed with participants in focus group discussions (see 4.2), and nutritional information was captured for the 24 hours prior to the survey using the MDD-W index (see 4.1).

In our survey sample, Ghanaian respondents (Figure 4.1) reported consuming three meals per day more frequently than Ivorian respondents (Figure 4.2). There is also a corresponding lower incidence of Ghanaian households only consuming one meal per day compared with Côte d'Ivoire respondents (*highly significant*).

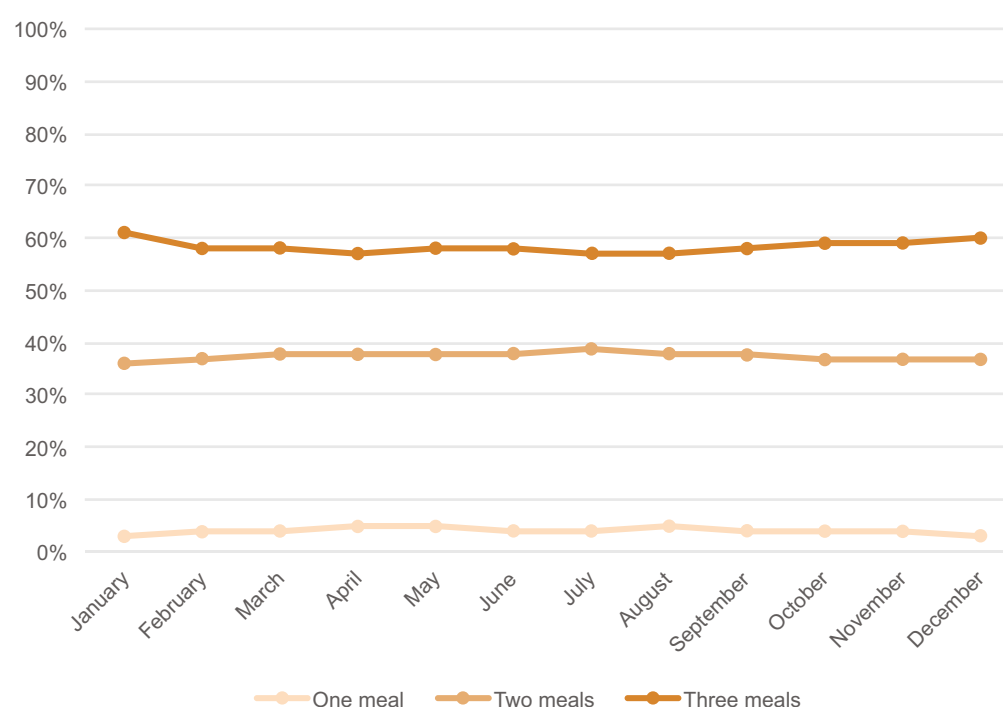
A review of the literature suggested we would find a decline in the number of meals consumed per day around the middle of the year, when food crops are yet to be harvested and before the cocoa main season begins around October. In our analysis, only a weak pattern is evident in Ghana, affecting a relatively small proportion of households. In Côte d'Ivoire, there is no clear variation in the proportion of households consuming one, two or three meals per day throughout the year.

Figure 4.1 Food security, percent of respondents who reported consuming 1, 2 or 3 meals per day each month, Ghana



⁹ For recent discussion on this topic see Jones, A.D., Ngure, F.M., Pelto, G., Young, S.L. (2013). What are we assessing when we measure food security? A Compendium and Review of Current Metrics. 2013 American Society for Nutrition. Adv. Nutr. 4: 481–505, 2013; doi:10.3945/an.113.004119. Available at http://www.fao.org/fileadmin/templates/ess/documents/meetings_and_workshops/cfs40/001_What_Are_We_Assessing_When_We_Measure_Food_Security.pdf

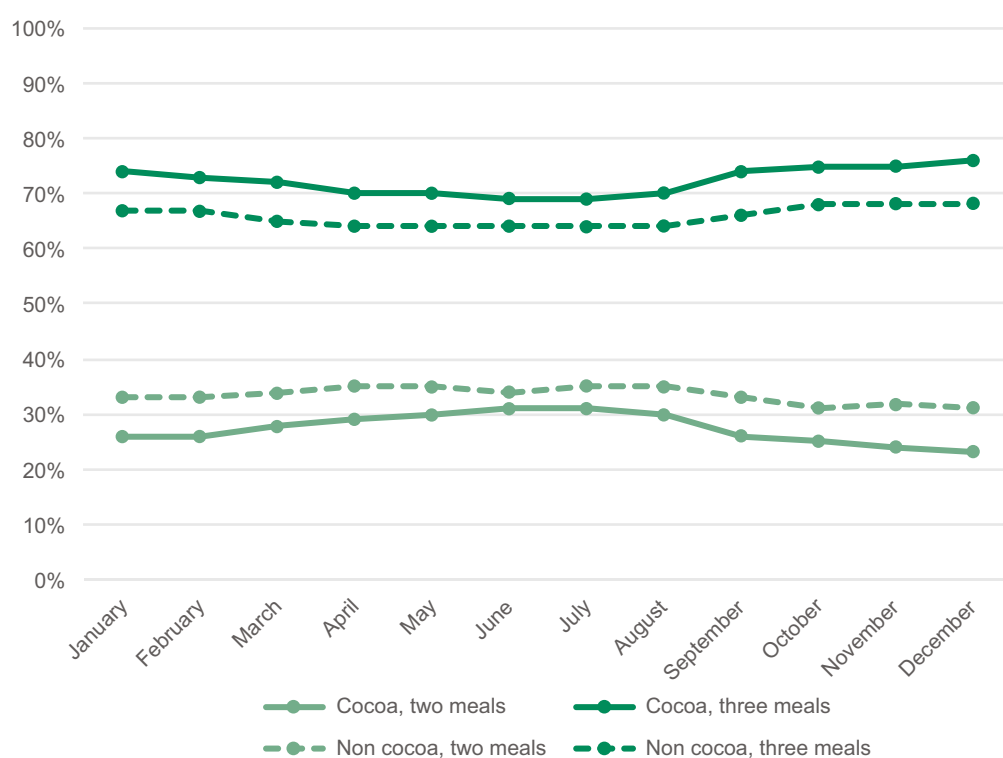
Figure 4.2 Food security, percent of respondents who reported consuming 1, 2 or 3 meals per day each month, Côte d'Ivoire



In addition to the country level analysis, we wanted to know whether there was a difference in the number of meals consumed between cocoa and non-cocoa households. In Ghana, we found a difference between cocoa and non-cocoa households (*highly significant*) (Figure 4.3). This suggests that cocoa households in Ghana are more 'food secure' than non-cocoa households. In Côte d'Ivoire, however, there is no statistically significant difference between cocoa and non-cocoa households. Overall, in both countries, the data suggests that we can reject the hypothesis that cocoa households are less food secure than non-cocoa households.

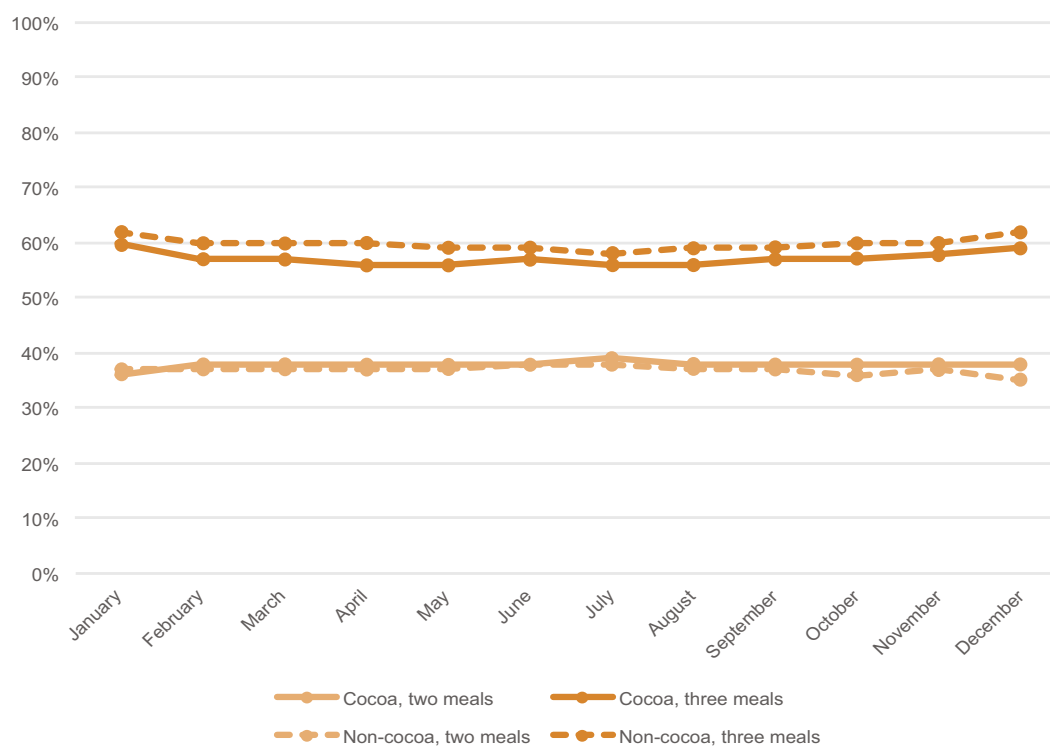
We also analysed the difference in the number of meals usually consumed by male and female-headed households. In Ghana and Côte d'Ivoire, the data suggests that 2-3% more male-headed households consistently consume three meals per day than female-headed households across the year. However, this is not statistically significant and should therefore not be interpreted as male-headed households being more food secure than female-headed households.

Figure 4.3 Food security, percent of respondents who reported consuming 2 or 3 meals per day each month, cocoa and non-cocoa households, Ghana



Note: Differences between cocoa and non-cocoa households are statistically significant for most months. N cocoa households = 1318; N non-cocoa households = 242;

Figure 4.4 Food security, percent of respondents who reported consuming 2 or 3 meals per day each month, cocoa and non-cocoa households, Côte d'Ivoire



Note: Differences between cocoa and non-cocoa households are not statistically significant for most months. N cocoa households = 908; N non-cocoa households = 575

4.2 Nutrition

Dietary diversity is an important component of nutrition. Generally, more diverse diets associated with higher micronutrient intakes. Micronutrient deficiencies, like iron or vitamin A deficiency lead to higher morbidity and disease. Studies also show that improved nutrition status, specifically reduced iron deficiency, results in higher productivity levels, because people are stronger, less tired and develop better cognitively.^{10,11}

For this study, we were asked by IDH and GAIN to include nutrition questions based on the MDD-W index, developed by FAO in collaboration with the USAID Food and Nutrition Technical Assistance III Project (FANTA). The MDD-W is a dichotomous indicator of whether or not women of reproductive age (15–49 years) have consumed at least 5 out of 10 defined food groups the previous day and night. The proportion of women 15–49 years of age who reach this minimum in a population can be used as a proxy indicator for higher likelihood of micronutrient adequacy, one important dimension of diet quality. Women who consume food items from 5 or more of the 10 groups are also highly likely to consume at least one animal-source food and either pulses or nuts/seeds and food items from 2 or more of the fruit/vegetable food groups.¹²

As per the MDD-W methodology, only female respondents between 15-49 years old were asked questions on nutrition, because they are typically the household members who buy the food and prepare meals and are representative for the food intake of the whole household. In addition, women are one of the vulnerable populations (last to eat but also higher nutrient requirements), along with children.

In our survey, female respondents were asked a series of 10 questions related to the food groups consumed the 24 hours prior to the survey (Table 4.1). The questions were based on the MDD-W model questionnaire,¹³ with some descriptions elaborated to include examples of local foods. The process for asking questions is strict; female respondents were asked if they had anything to eat when they woke, and if so what they ate. The respondent is then sequentially asked about food consumed later in the morning, at midday, during the afternoon, in the evening, and before going to bed. Quantities of food only above X ml/mg were considered sufficient to count towards a food group.

¹⁰ Haas, J. and Brownly, T. (2001). Iron Deficiency and Reduced Work Capacity: A Critical Review of the Research to Determine a Causal Relationship. In the Journal of Nutrition, Volume 131, Issue 2, 1 February 2001, Pages 676-690. Available at <https://doi.org/10.1093/jn/131.2.676>

¹¹ De Vries, K. (2015). Could nutrition sensitive cocoa value chains be introduced in Ghana? Report of a brief study that identifies opportunities and bottlenecks. Centre for Development Innovation, Wageningen UR (University & Research centre). Report CDI-15-105. Wageningen. Available at <http://edepot.wur.nl/364252>

¹² Martin-Prévêla, Y., Allemand, P., Wiesmann, D., Arimond, M., Ballard, T., Deitchler, M., Dop, M., Kenned, G., Lee, W.T.K., Moursi, M. (2015). Moving Forward in Choosing a Standard Operational Indicator of Women's Dietary Diversity. Food and Agricultural Organization of the United Nations. Available at <http://www.fao.org/3/a-i4942e.pdf>

¹³ FAO and FHI 360 (2016). Minimum Dietary Diversity for Women: A Guide for Measurement. Rome: FAO. Available at <http://www.fao.org/nutrition/assessment/tools/minimum-dietary-diversity-women/en/>

The survey was implemented in Ghana between December 2016 and mid-January 2017 (peak season cocoa) and, in Côte d'Ivoire, from February 2017 to March 2017 (end of cocoa season). As the survey has been carried out in different months, we suggest that it would not be appropriate to compare the Ghana and Côte d'Ivoire samples. As per the MDD-W guidance document, future studies wishing to compare nutrition data with this study must bear in mind seasonal variations and seek to align the timing of data collection.

Table 4.1 MDD-W categories and descriptions used in the household survey

Code	Category	Description
A	Foods made from grains	Maize, wheat or Hausa (spicy millet) porridge; Bread or sometimes buff loaf (puff puff); Kenkey (fermented cornmeal dough); Wakye (rice and beans); Tuozaafi (cooked maize dough)
B	White roots and tubers and plantains	Fufu; Banku (fermented corn and cassava dough); Akpele (corn and cassava dough); Ampesi (boiled yam/plantain/cocoyam/cassava)
C	Pulses (beans, peas, lentils)	Bean stew; Koose (fried bean cake); Wakye (rice and beans)
D	Nuts and seeds	Any nuts or peanuts, groundnut soup, groundnut sauce, seeds
E	Milk and milk products	Milk, cheese, yoghurt or other milk products (but NOT including condensed milk or powdered milk)
F	Organ meat	Liver, kidney, heart or other organ meats or blood-based foods, including from wild game
G	Meat and poultry	Beef, pork, lamb, goat, rabbit, wild game meat, chicken, duck or other bird
H	Fish and seafood	Fresh or dried fish, shellfish or seafood
I	Eggs	Eggs from poultry or any other bird
J	Dark green leafy vegetables	Medium-to-dark green leafy vegetables, including wild/foraged leaves; Mainly consumed as kontomire stew and Ayoyo (corchorus leaves)
K	Vitamin A-rich vegetables, roots and tubers	Pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside
L	Vitamin A-rich fruits	Red palm oil, ripe mango, ripe papaya;
M	Other vegetables	Mainly eggplants, tomatoes, okras
N	Other fruits	Mainly oranges and sweet bananas
U	Condiments	Ingredients used in small quantities for flavour, such as chillies, spices, herbs, fish powder, tomato paste, flavour cubes or seeds
V	Other food or beverage	Tea and coffee, if not sweetened, clear broth, alcohol, pickles, olives and similar

To construct the MDD-W indicator, we add up the scores from the 10 MDD-W food groups (A-N), where each 'yes' response receives the value '1'. Table 4.2 shows the MDD-W score by country for female respondents that fall within the reproductive age. With a mean score of 5.15, the MDD-W in Ghana score is significantly higher than in Côte d'Ivoire, which has a score of 4.06. The distribution of MDD-W scores for both countries is shown in Figure 4.5. In Ghana, 64% of the respondents has achieved MDD-W, in Côte d'Ivoire this is only 35% (Table 4.3).

The difference between the two countries can be partly explained by the survey timing; in Ghana, we conducted the survey during the cocoa peak season, when generally more money is available. In addition, we expect that the data collection date has quite an influence on the MDD-W and the respective analysis done here, as it would possibly look completely different during other periods of the year.

Table 4.2 Nutrition, mean MDD-W score, by country

	Ghana	Côte d'Ivoire	pvalue	sig
mean	5,15	4,06	0,00	***
std. error	0,11	0,08		
N	230	293		
MDD-W_score				

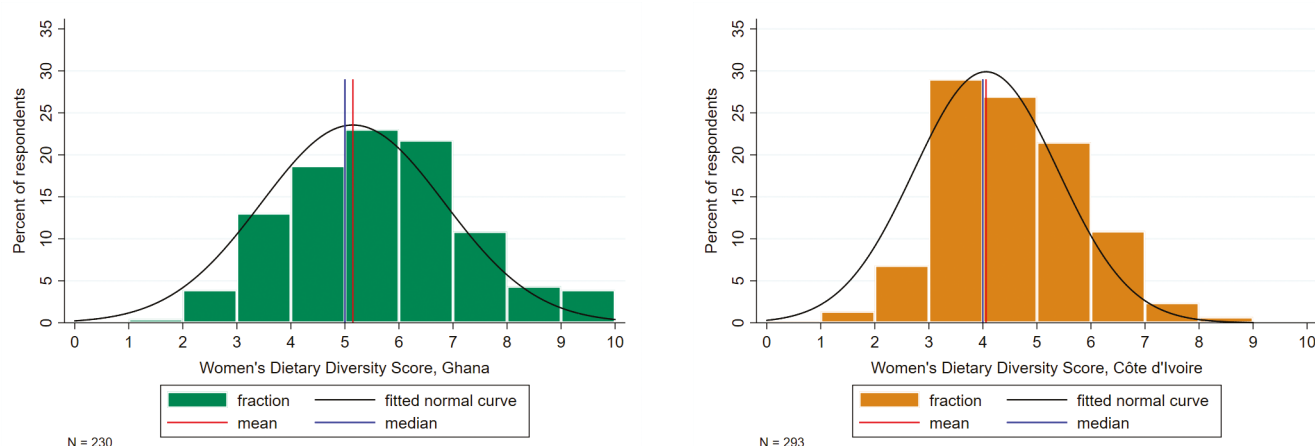
Note: p-value from a one-way ANOVA test

Table 4.3 Nutrition, achieved MDD-W score (percent of respondents), by country

	Ghana	Côte d'Ivoire	pvalue	sig
Mean	64%	35%	0.00	***
std. error	3%	3%		
N	230	293		
MDD-W_bin				

Note: p-value from a one-way ANOVA test

Figure 4.5 Distribution of MDD-W score in percentage



We further analysed whether MDD-W scores differed between cocoa and non-cocoa households. In Ghana, there is no statistical difference between cocoa and non-cocoa households (Table 4.4). But in Côte d'Ivoire, we do see a small difference between women in cocoa and non-cocoa household (*highly significant*). This suggests that women in cocoa households in Côte d'Ivoire have a higher MDD-W score than women in non-cocoa households. Overall, in both countries, the data suggests that cocoa households are not less dietary diverse than non-cocoa households.

Table 4.4 Nutrition, mean MDD-W score, by cocoa vs non-cocoa

	Ghana cocoa	Ghana non-cocoa	pvalue	sig	Côte d'Ivoire cocoa	Côte d'Ivoire non-cocoa	pvalue	sig
Mean	5.09	5.32	0.37		4.28	3.88	0.01	***
std. error	0.13	0.22			0.12	0.10		
N	170	60			133	160		
MDD-W_score								

Table 4.5 Nutrition, Achieved Minimum Dietary Diversity Score (percent of respondents), by cocoa vs non-cocoa

	Ghana cocoa	Ghana non-cocoa	pvalue	sig	Côte d'Ivoire cocoa	Côte d'Ivoire non-cocoa	pvalue	sig
mean	62%	70%	0.25		41%	31%	0.09	*
std. error	6%	4%			4%	4%		
N	170	60			133	160		
MDD-W_score_coded								

Figure 4.6 shows the distribution of MDD-W scores for cocoa and non-cocoa households in Ghana, while Figure 4.7 shows the distribution of MDD-W scores for cocoa and non-cocoa households in Côte d'Ivoire.

Figure 4.6 Distribution of MDD-W score cocoa and non-cocoa households, Ghana

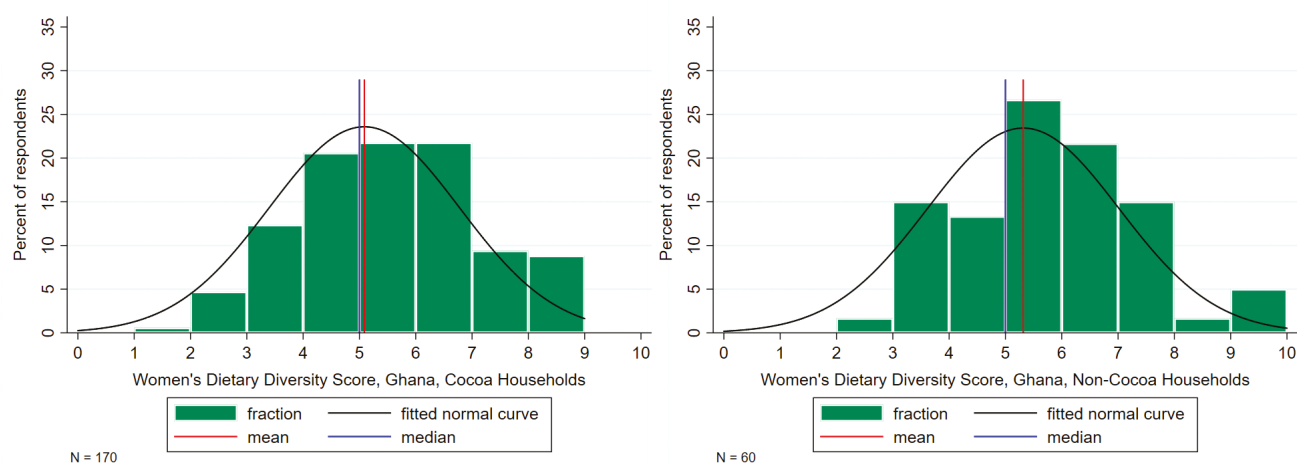
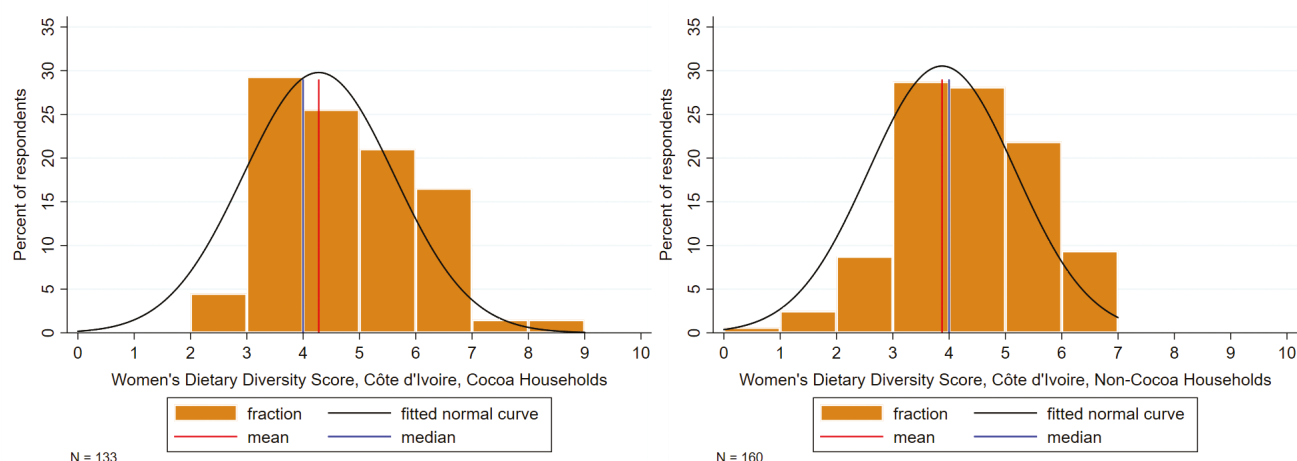


Figure 4.7 Distribution of MDD-W score cocoa and non-cocoa households, Côte d'Ivoire



Dietary diversity scores were also analysed according to whether the household was male or female-headed.¹⁴ The data suggests that, in both countries, women in female-headed households score slightly lower on dietary diversity than women in male-headed households. However, in Ghana, there is no significant difference in the proportion of male and female-headed households achieving the MDD-W. In Côte d'Ivoire, a higher proportion of male-headed households achieved the MDD-W than female headed households, however the number of observations for female headed households is quite small, so this may not be a robust finding.

Table 4.6 Nutrition, mean MDD-W score, by sex of household head

	Ghana female head	Ghana male head	pvalue	sig	Côte d'Ivoire female head	Côte d'Ivoire male head	pvalue	sig
mean	4.92	5.31	0.08	*	3.75	4.15	0.04	**
std. error	0.17	0.15			0.17	0.09		
N	96	132			57	234		
MDD-W_score								

Table 4.7 Nutrition, achieved MDD-W score (percent of respondents), by sex of respondent

	Ghana female head	Ghana male head	pvalue	sig	Côte d'Ivoire female head	Côte d'Ivoire male head	pvalue	sig
mean	60%	67%	0.26		19%	40%	0.00	***
std. error	5%	4%			5%	3%		
N	96	132			57	234		
MDD-W_bin								

¹⁴ Note: female respondents answered the MDD questions and come from either male or female-headed households.

4.3 Availability and affordability of food groups

Accessibility, availability, affordability and usage of food are key determinants for food intake and household nutrition security.¹⁵ There are also other factors that influence food intake, such as own food crop production and purchasing power, but also tradition, culture, and knowledge regarding the importance of a good diet.¹⁶

Households in cocoa growing areas in Ghana and Côte d'Ivoire grow a number of different food crops, which are used for consumption and for sale. During the lean season certain food groups are less available or not affordable.

The data presented in this section is mainly qualitative data, extracted from 23 focus group discussions, involving more than 1,000 farmers in total (34% women), in cocoa growing areas in Ghana and Côte d'Ivoire. Focus group participants were asked for their perspectives on the availability and affordability of different food groups according to the pre-defined food groups used in the MDD-W (Table 4.1).

4.3.1 Availability and affordability of food products in Ghana

In Ghana, the availability and affordability of different food groups were discussed in 13 focus group discussions. Table 4.8 shows the number of focus groups (approx. 50 participants per group) that agreed each food group was 'generally available', 'sometimes available' or 'poorly available'. Table 4.9 shows the number of focus groups in Ghana that predominantly agreed each food group was 'generally affordable', 'sometimes affordable' or 'poorly affordable'.¹⁷

¹⁵ Kenkhuis, M. (2016). Nutritional status among cocoa farming families and underlying causes in Ghana. GAIN. Available at <http://www.gainhealth.org/wp-content/uploads/2017/03/Desk-research-Ghana.pdf>

¹⁶ Ibid

¹⁷ Note: Both tables represents general agreement by the majority of focus group participants, even though some individual participants may have a dissenting view. In the group discussions it was not possible to make a distinction between cocoa households and non-cocoa households.

Table 4.8 Food group availability in Ghana (number of focus groups reporting)

	Poor availability	Sometimes available	Generally available
Dairy	1		12
Eggs			13
Fish and seafood		1	12
Grains	1		12
Condiments		1	12
Leafy vegetables		6	7
Meat and poultry	2		11
Nuts and seeds		1	12
Organ meat	4	2	7
Other fruits		4	9
Other vegetables		3	10
Pulses	1		12
Root vegetables	2	7	4
Roots and tubers			13
Tea and coffee		1	12
Vitamin A rich fruits		9	4

Table 4.9 Food group affordability in Ghana (number of focus groups reporting)

	Poor affordability	Sometimes affordable	Generally affordable
Dairy	11	1	1
Eggs	3		10
Fish and seafood	8	1	4
Grains	2	9	2
Condiments	4		9
Leafy vegetables		2	5
Meat and poultry	12	1	
Nuts and seeds	6	4	3
Organ meat	9	2	
Other fruits		3	8
Other vegetables		8	5
Pulses	4	7	2
Root vegetables	8		3
Roots and tubers		6	7
Tea and coffee	8		5
Vitamin A rich fruits		2	10

The focus group discussions offer insight on what influences availability and affordability of certain food groups, and to what extent affordability affects usage (consumption).¹⁸ Table 4.8 suggests that, in Ghana, most food groups are ‘generally available’, whereas affordability is often perceived to be more problematic.

Eggs, fruits and condiments (e.g. flavour cubes, herbs, spices) are food groups that are generally locally available and affordable. Eggs and condiments are available throughout the year and are consumed in small quantities. The availability of fruits is generally not

¹⁸ Note: In many cases, participants in the focus group discussions were referring only to a few food items that fall under the broader food group. We were not always able to discuss all food groups.

a problem because farmers produce fruits themselves (e.g. bananas, oranges, papaya, mango), although availability (and prices) fluctuate for seasonal fruits.

"In the peak season, fruit is very cheap. [...] We don't buy papaya because we all have our own in the garden." (FGD, Western Region, Ghana)

Dairy, fish, and meat are generally available but poorly affordable. Dairy foods, tea and coffee are often available only in small quantities and are perceived to be relatively expensive because they are processed and 'imported' from outside the communities.

The availability of grains (e.g. maize, rice and wheat), vegetables (e.g. tomatoes, okra, and *garden eggs*),¹⁹ pulses (e.g. beans), roots and tubers (e.g. cassava and plantain) and nuts and seeds (e.g. groundnuts) varies. Affordability largely depends on seasonal availability, whether or not it is produced locally and whether or not it can be stored for a long period.

"Maize is planted by everyone and is therefore cheap and available. Rice, however, is planted by few and is therefore expensive. We need to import it." (FGD, Ashanti Region, Ghana)

"Wheat is always expensive as we do not produce it. It's the food for the white men." (FGD, Western Region, Ghana)

"In January, February, March garden eggs are scarce and become very expensive" (FGD, Western Region, Ghana)

"The land here is not good to plant beans." (FGD, Ashanti Region, Ghana)

"In the dry season cassava becomes expensive. The soil is hard and it is more difficult to harvest. But in March and April there is oversupply and the cassava gets rotten" (FGD, Brong-Ahafo, Ghana)

Leafy vegetables (e.g. cocoyam leaves) are, although only 'sometimes available', considered to be cheap, except for the dry season.²⁰ Focus group participants often stated that they fully relied on their own production and that they do not buy these leafy vegetables.

Usually when foods are expensive, consumption declines. However, demand for meat increases during the main cocoa season, when there is more money to spend, and on special occasions, such as Christmas.

"On special occasions, I cook a full pot of chicken and meat. The type of meat depends on family taste and money." (FGD, Ashanti Region, Ghana)

"We only eat meat on occasions, at Christmas or Easter." (FGD, Ashanti Region, Ghana)

¹⁹ You could compare garden eggs with eggplant; garden eggs are whitish/yellow and used for stew.

²⁰ See also: Quaye, W., Adofo, K., Agyeman, K. O., & Nimoh, F. (2010). Socioeconomic survey of traditional commercial production of cocoyam and cocoyam leaf. Available at <http://www.bioline.org.br/abstract?id=nd10096>

"Most eat fish every day, but in March and April we reduce the amount because there is less money to spend." (FGD, Western Region, Ghana)

When certain foods are expensive, farmers may opt for an alternative. For example, fish and meat are both seen as an important source of protein, and both foods are expensive. Because fish is usually 'cheaper' compared to meat, farmers tend to prefer fish over meat. Also, when foods are considered to be healthy, farmers do continue to consume these products.

"Fish reduces cholesterol, makes you stronger. Men must eat, no matter of the price." (FGD, Ashanti Region, Ghana)

"We only buy [milk] when we are sick and the doctor in the hospital prescribes it." (FGD, Western Region, Ghana).

"The price for organ meat is high, but when we feel like eating we buy it. The doctor advises that organ meat is good for the human body." (FGD, Western Region, Ghana)

4.3.2 Food availability and affordability in Côte d'Ivoire

The availability and affordability of different food groups were discussed in 10 focus group discussions in Côte d'Ivoire. Table 4.10 shows the number of focus groups in Côte d'Ivoire that predominantly agreed each food group was 'generally available', 'sometimes available' or 'poorly available'. Table 4.11 shows the number of focus groups in Côte d'Ivoire that agreed each food group was 'generally affordable', 'sometimes affordable' or 'poorly affordable'.²¹

Table 4.10 Food group availability in Côte d'Ivoire

	Poor availability	Sometimes available	Generally available
Dairy	4		6
Eggs	1	1	8
Fish and seafood			11
Grains		2	9
Condiments			10
Leafy vegetables		1	10
Meat and poultry	1	6	4
Nuts and seeds	1	2	7
Organ meat	3	4	2
Other fruits	1	5	5
Other vegetables		5	5
Pulses	1	1	8
Root vegetables	7	1	2
Roots and tubers	1	1	9
Tea and coffee			10
Vitamin A rich fruits		5	5

²¹ Note: Both tables represents general agreement by the majority of focus group participants, even though some individual participants may have a dissenting view. In the group discussions it was not possible to make a distinction between cocoa households and non-cocoa households.

Table 4.11 Food group affordability in Côte d'Ivoire

	Poor affordability	Sometimes affordable	Generally affordable
Dairy	8		1
Eggs	5	1	4
Fish and seafood	4	1	5
Grains	4	3	3
Condiments		2	8
Leafy vegetables			4
Meat and poultry	8	2	
Nuts and seeds	3	3	4
Organ meat	8	1	
Other fruits	1	2	4
Other vegetables	2	5	3
Pulses	2	3	4
Root vegetables	5	2	2
Roots and tubers	1	5	3
Tea and coffee	1		8
Vitamin A rich fruits	1	1	4

Table 4.10 suggests that, in Côte d'Ivoire, most food groups are 'generally available', although some food groups are more often available than others. As in Ghana, the affordability of food groups in Côte d'Ivoire is widely perceived to be more problematic than availability.

In Côte d'Ivoire, tea (*Lipton tea*) and coffee (*Nescafé sachets*) are generally available and affordable, even though these products are imported. Other foods that are generally affordable are condiments (e.g. Maggi cubes) and leafy vegetables (e.g. spinach, okra, taro, cassava, *moringa*, sweet potatoes, eggplant), which farmers use for stews and other meals. Farmers said they generally do not need to buy these vegetables as they are produced by the farmers themselves.

"Leafy vegetables are usually in abundance. We go to the field and pick leaves for the food. We do not buy." (FGD, Haut-Sassandra, Côte d'Ivoire)

"Maggi is cheap. We use it in almost every meal." (FGD, Grebe, Côte d'Ivoire)

Fish was considered to be widely available in Côte d'Ivoire, but the affordability varies according to local availability, and whether or not the fish is sold as 'fresh' or 'smoked'. In Côte d'Ivoire, most groups mentioned that nearby rivers are the most important source of fish. Other food groups that are widely available, but not always affordable are grains, eggs, and roots and tubers.

"The price of fish varies: expensive in the rainy season [when water rises], less expensive in the dry season [when the water is low]." (FGD, Guémon, Côte d'Ivoire)

"We find fish expensive, because we have to travel to buy and we don't have fishermen in our town." (FGD, Indenie-Ojuablin, Côte d'Ivoire)

"The bread is expensive, but the maize is cheap as we produce it ourselves. However, prices of maize increase in the dry season and affordability goes down." (FGD, Haut-Sassandra, Côte d'Ivoire)

In Côte d'Ivoire the availability of meat and dairy (e.g. milk) varies because these products are often not locally produced, or only in small amounts. The availability of vegetables (e.g. eggplant, tomatoes, okra and spices) and fruits (e.g. oranges, bananas, avocado, papaya, mango and passion fruit) also varies, depending mainly on the season. Because farmers produce vegetables and fruits themselves, they generally do not need to buy these crops.

"Organ meat is too expensive. We need to go to the next town to buy. The next town is 9 km away. We either, walk, bike or take the bus to the city depending on what we have." (FGD, Haut-Sassandra, Côte d'Ivoire)

"We usually don't buy as fruits are in abundance in the season." FGD, Gôh Region, Côte d'Ivoire)

When certain foods are expensive, consumption reduces. In Côte d'Ivoire, more than in Ghana, consumption of expensive products, such as meat and milk, is often limited to special occasions or when more cocoa money is available.

"Milk is expensive. We only drink it during holiday season when there is something to celebrate." (FGD, San Pedro, Côte d'Ivoire)

"We can buy meat in San Pedro but we can only afford it when we have had a good cocoa harvest. So only in the main season." (FGD, San Pedro, Côte d'Ivoire)

"We maybe eat meat once a month. We eat more meat during festival seasons." (FGD, Grebe, Côte d'Ivoire)

"We can only buy bush meat in the village, we do not produce [other] meat.. We only buy [other] meat in the holiday season when traders come from the town to sell in the village." (FGD, Haut-Sassandra, Côte d'Ivoire)

When certain foods are not available or expensive, farmers may shift to alternatives. For example, instead of 'normal' meat farmers will consume alternative bush meat, like agouti and antelope, or even dogs and snakes.

"Beef is not affordable, chicken is a little bit affordable. We hardly eat it as it is too expensive. We prefer fish." (FGD, Guémon, Côte d'Ivoire)

4.4 Periods of food insecurity

While our household survey data shows only a weak variation in the number of meals consumed throughout the year, focus group participants did suggest that there are periods of relative food insecurity during the year.

In Ghana, farmers explained that after most food crops have been harvested in March, food availability may become scarcer. It is also the period when cassava becomes difficult to harvest due to the hardness of the soil. In April, when the first rains begin, food crops are replanted. The main rainy season is in June and July, and in these months there can be periods of food scarcity. In this period the newly planted food crops are not yet ready to be harvested and low supply in most communities leads to increased food prices. Furthermore, durable food stuffs that have been purchased during the main cocoa season usually start running low in this period. As coping strategies, some farmers may reduce the amount of food they consume or, as a last resort, take out loans. Participants explained that not all households were able to maintain a healthy diet during this period of scarcity. The main cocoa harvest begins from around September (even though it officially begins 1 October). Table 4.12 illustrates the timing of the dry and rainy seasons, periods of food insecurity and the timing of the cocoa harvest.

Table 4.12 Seasons in Ghana

Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Dry season												
Rainy season												
Periods of food insecurity												
Cocoa harvest				Light cocoa harvest					Main cocoa harvest			

Source: Author's interpretation of focus group data

In Côte d'Ivoire, we see a rather similar situation as in Ghana. The main difference is that some areas in Côte d'Ivoire experience an additional 'short rains'. Most farmers mentioned April, May and June as the rainy season although some said the rainy season continued in July. Around half of the groups identified September and October as an additional rainy period (Table 4.13). Focus group participants agreed that in terms of food security and nutrition, August is the most difficult month for them. In this month, most food crops that have been replanted in April are not yet ready for harvesting. Scarcity leads to higher food prices in the markets. The main cocoa season begins in October, a month later than in Ghana, and lasts until January.

Table 4.13 Seasons in Côte d'Ivoire

Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Dry season												
Rainy season												
Periods when there is food insecurity												
Cocoa harvest				Light cocoa harvest						Main cocoa harvest		

Source: Author's interpretation of focus group data

In both Ghana and Côte d'Ivoire, food was reported as some of farmers' biggest household expenditures. This is particularly the case in the middle of the year (due to scarcity) and at the end of the year, when farmers have more cocoa money to spend, and households celebrate the holiday period.

In Ghana, school fees were also ranked as one of the biggest expenditure items by many groups. Participants explained that this was because of the number of school age children in an average household; the value that most families attribute to education as a means of improving future livelihood prospects; the fact that child labour is prohibited by the Ghanaian government and usually enforced by local child well-being committee; and the cost of school fees itself. School fees are typically paid over three terms: in September at the start of the school year, in January and in April/May. Participants explained that paying school fees is most difficult in September which is at the beginning of the cocoa seasons and prior to the harvesting of other crops. During this period, farmers either rely on savings, find non-agricultural income sources, or take out a loan (only when no other options are available).

Farm inputs, such as fertiliser, were either bought immediately after the cocoa harvest (December/January), when money is available, or just at the time they need some (March/April for fertiliser, July/August for fungicides). In Ghana, COCOBOD supplies fertiliser and some other farm inputs which takes the pressure off households who receive these inputs.

Social expenditures, such as church contributions, marriages and funerals can occur at any time during the year. In Ghana, the annual sum paid for church contributions can be up to 10% of a respondents' total income and can be paid either in cash or with produce. Church contributions can be made weekly, monthly, yearly, or a combination of these, depending on which church is attended. Funerals also involve great expenses. In both Ghana and Côte d'Ivoire, there can be a difference between when a person is buried and when the last funeral rites are performed. This timing partly depends on the wealth of the family as to whether funeral rites take place immediately when a person is buried, or a little later when money becomes available such as after the main cocoa harvest. Many participants said that it is common for households to take out a loan to pay for funeral costs.

It is also common for churches or community members to donate a small amount to help pay for funerals.

Construction requires significant investment in building materials, labour, and land. Households often make housing investments in stages, whenever they have money to invest. In Ghana, participants frequently mentioned that households engage in construction after the main cocoa harvest when money is available.

Table 4.14 Rank of biggest household expenditures (number of focus groups), Ghana

Rank	Biggest	Second biggest
School fees	6	3
Food for the household	4	5
Buying fertiliser	2	1
Healthcare		2

Note: Only the expenditure items most frequently ranked by focus group are presented above

Table 4.15 Timing of household expenditures during the year, Ghana

Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
School fees												
Food for the household												
Healthcare, insurance												
Buying fertiliser												

Source: Author's interpretation of focus group responses

In Côte d'Ivoire, education-related expenses were also highlighted by focus group participants, although in theory public schools are in theory free of charge. Parent-Teacher Associations require membership fees at the beginning of the year, and expenses such as uniforms and books also need to be paid. Education costs may be often problematic because of the timing, which falls between the main and light cocoa seasons. Many participants say they lack disposable income in this period and either ask permission from school to delay their payment, or they take out a loan from the local buyer (*pisteur*) that is repaid in the main season.

Healthcare was ranked as the second highest expenditure in Côte d'Ivoire. Unlike in Ghana, Ivoirians do not benefit from a national health insurance programme. Ivoirian participants explained that healthcare costs are made throughout the year, but there are certain periods when they are more vulnerable to falling ill. For example, in the dry season from December to March (also known as the *Harmattan* season), the air is dry and dusty, which leads to more health problems. In addition, the rainy season leads to an increase in the number of mosquitoes, which results in a higher incidence of malaria. Participants said that they do more heavy farm work during this period, which may lead to fatigue or injury.

Table 4.16 Rank of biggest household expenditures, Côte d'Ivoire (number of FGD groups)

Rank	Biggest	Second biggest
School fees/ education costs	6	2
Food for the household	3	
Healthcare		7

Note: Only the expenditure items most frequently ranked by focus group are presented above

Table 4.17 Timing of household expenditures during the year, Côte d'Ivoire (number of FGDs)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Food for the household												
Healthcare												
Educational costs												

Source: Author's interpretation of focus group responses

4.5 Summary

Ghanaian households appear to be more 'food secure' than Ivorian households.

Ghanaian respondents more frequently report consuming three meals per day than Ivorian respondents throughout the year. Fewer Ghanaian households consume only one meal per day compared with Côte d'Ivoire respondents. Focus group data suggests that there is greater availability of most food groups in Ghana compared with Côte d'Ivoire.

There is relatively little variation in the number of meals consumed per day throughout the year in both Ghana and Côte d'Ivoire. Nevertheless, qualitative data suggests that there *are* periods of relative food insecurity.

Food insecurity is greatest just before the cocoa main season. This is the period when there is little money left in the household, farmers run out of stocks, and it is still too early to harvest replanted food crops. In this period, food prices are relatively high.

Cocoa households are not less food secure than non-cocoa households. In Ghana, cocoa households reported a significantly higher average number of meals per day than non-cocoa households. In Côte d'Ivoire, differences were not statistically significant.

Affordability of certain food groups is more of a challenge than availability.

Affordability becomes a particular issue when a food is not widely produced in the community and has to be imported, and when it is out of season.

In the lean season, households apply a range of coping strategies. When stored food begins to run low, households may need to purchase more food than usual. Unfortunately, they also face higher food prices caused by the lower food supply and an increase in demand. Households may need to rely on savings or income from other sources to purchase food.

In Ghana, 64% of women in reproductive age achieved minimum dietary diversity. In Côte d'Ivoire, only 35% respondents achieved the same. It should be noted that, in Ghana the data was collected during the main cocoa season when households had more disposable income available, whereas data was collected a month or two later in Côte d'Ivoire. This means the two countries are not directly comparable.

Cocoa is at the centre of many household decisions. Where possible, household expenditures are deferred to the main cocoa harvest, which may include funeral expenditures, construction work, or spending on more expensive food products. This shows the need for good financial planning within the household.

Education-related expenses are the most important expense mentioned in both countries. Other major expenditures are food, healthcare (for Côte d'Ivoire), inputs, labour, social expenditures and construction.