

Labor practices in the cocoa sector of Ghana with a special focus on the role of children

Findings from a 2001 survey of cocoa producing
households

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Executive summary

A baseline survey of the major cocoa-growing regions in Ghana was conducted to provide information necessary for the implementation of the Sustainable Tree Crops Program (STCP). It forms part of activities that were approved during the regional STCP implementation workshop held from 22 to 26 May 2000 in Accra, Ghana. The survey was conducted in the four major producing regions of Ghana which are the Western, Brong Ahafo, Ashanti, and Eastern regions.

In mid-2001, accounts of slavery-like practices and trafficking involving children on cocoa plantations of Côte d'Ivoire were reported in the media. To assist in addressing this highly complex issue, the STCP solicited the expertise of the International Programme on the Elimination of Child Labor (IPEC) of the International Labor Organization (ILO).

Given this new context, the labor practices section of the STCP baseline survey was significantly amended and expanded to address the issue of child labor and implemented in the field from October to November 2001. The specific objectives of the survey on child labor are:

- To determine the type, extent, and magnitude of child labor utilized in the cocoa sectors of Cameroon, Nigeria, Ghana, and Côte d'Ivoire with a particular regard to the issues raised in Articles 3(a) and 3(d) of ILO Convention 182.
- To provide information needed for designing effective interventions for addressing the issue of child labor abuse in the pilot projects currently under development.

The guiding framework for the child labor investigations and interventions of the STCP is ILO Convention 182 concerning the Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labor. Articles 3(a) and 3(d) of Convention 182 proscribe “all forms of slavery or practices similar to slavery such as the sale and trafficking of children, debt bondage and serfdom, and forced or compulsory labor” and “work which, by its nature or the circumstances in which it is carried out is likely to harm the health, safety, or morals of children.” It is within this perspective that the analysis has been conducted.

The findings from the baseline survey will be used to target and develop appropriate interventions to meet local needs surrounding the issue of child labor. A key part of the pilot phase is to implement child labor interventions and get trafficking and migration programs focusing and serving the pilot project areas. Each pilot project is in the process of planning interventions aimed at: (a) strengthening farmer organizations, (b) implementing technical packages to increase productivity and enhance environmental services, (c) establishing child labor programs and (d) developing trade and information systems.

In Ghana, the STCP baseline survey focused on the cocoa producers of the Western, Ashanti, Eastern, and Brong Ahafo regions which together account for approximately 90% of national production. In addition to labor issues, the survey questionnaire addressed five other areas:

1. The agricultural system and rural livelihoods (demographics, other enterprise, farm size, capital inventory)
2. Rural service provision (input markets, credit markets, market and production information, rural organization)
3. Tree stocks by age, replanting, uprooting and new planting
4. Agronomic practices and output by plot
5. Postharvest practices and marketing

The sample size in each region was proportional to its cocoa production. A total of 85 villages in the four regions were visited and 1000 household heads were interviewed.

The typical Ghanaian cocoa producer earns his livelihood on a diversified family farm with the revenues from the cocoa enterprise accounting for about 55% of the household revenues. Annual production among the sample producers was slightly under one tonne. Regionally, the cocoa enterprise attains the most importance in the Western region where it accounts for nearly two-thirds of household cash income.

Family size is relatively large. The mean farmer manages a household of slightly over nine, with children accounting for nearly 50% of household members.

By and large, Ghanaian cocoa farmers were themselves literate and saw to the education of their children. School enrollment rates (includes those children not yet of school going age i.e., from infants to three to four year olds) are high with three in every four children enrolled.

The scale of operation in Ghanaian cocoa farming is small. The average total farm size is under 9 hectare. Cocoa accounts for about 6.3 ha and food and associated fallow fields around 1.7 ha. Slightly less than one hectare of long bush fallow/secondary forest and was indicated by the average producer. The area in mature productive cocoa per farm averages 5.4 ha per farm while that of newly planted cocoa (< 4 years) slightly less than one hectare. Cocoa holdings were largest among sample producers in the Western and Brong Afoho regions. The frequency of pesticide use in Ghana is lower than in Nigeria or Cameroon. Almost half of all producers sampled indicated no use of either fungicides or pesticides. The lower use in Ghana would be expected to lower the overall risk of pesticide intoxication among children.

Cocoa production is, at the macroeconomic level, a labor-absorbing sector for the Ghanaian economy. For the representative Ghanaian producer producing a total of 940kg, the total annual labor demand for the major tasks associated with cocoa production is estimated at 178 person days¹. The national estimate for total labor demand in the cocoa sector is 75.7 million person days (representing full time employment for approximately 379 000 workers).

Growth in the cocoa labor demand has been rapid in recent years. Cocoa production has been increasing at a rate of almost 4% a year since the mid-1980s. The trend in cocoa production when technology remains unchanged is a very good indicator of changes in total labor demand within the sector. At this rate of growth, labor demand has been increasing

¹A person day of labor is defined as six hours at the work site.

more rapidly than the natural population growth rate. This rapid increase could lead to disequilibria in regional labor institutions (compounded by the even more rapid growth in cocoa output in neighboring Côte d'Ivoire). Institutional changes in arrangements such as sharecropping, the use of casual labor, migrant labor, and their implications for child workers were not explored in-depth in this study but may warrant additional study.

In Ghana as in Cameroon, there was no reported incidence of a permanent worker under the age of 18 among the producers interviewed. The incidence of children among salaried workers is of particular interest to the STCP because it was this type of worker category in which cases of child trafficking and child labor abuses bordering on slavery have been reported as defined by Article 3(a) of ILO Convention 182. It must be noted, however, that because of the sensationalism with which these incidents were reported, the issue of child workers has become extremely sensitive and there is a significant risk of under reporting by producers. To further substantiate this finding, a follow-up investigation involving direct worker interviews not in the presence of the producer should be conducted during the peak labor demand season (September to November).

Family labor was the most frequently employed type of labor consisting of the producer and his wife, and extended family members. Of the five most frequently reported labor types, four involve either family members or the non-monetary institution of reciprocal labor.

Sharecropper is an important labor type especially among cocoa producers with larger holdings. Overall, 23% of producers reported its use. The status and wellbeing of children living in the households of this significant labor group was not investigated. The institution of sharecropping was most prevalent in the Western region and was seen to increase significantly among larger producers. As interviews were only conducted with producers, there is a recommendation for further investigation into the livelihood strategies of sharecroppers and their children as in Nigeria and Cameroon.

Family children were the eighth most frequently employed labor type engaged by 10% of producers interviewed. This was the most frequently reported type of child labor. Other than this, there were five reported cases of children hired as casual labor. For households who employed them, family children contributed a large input. The mean producer employing family child labor (10% of the sample) received an estimated 100 days of labor annually from all children employed. Older children (10 to 17 years) accounted for 90% of the total labor supplied. The amount of labor supplied by girls was almost equal to that of boys.

The impact of employment on enrollment rates of children was slight. Over 90% of both girls and boys of school age working on cocoa farms were enrolled. But enrollment is only a weak indicator of cognitive development. Still unanswered are questions concerning:

- whether or not the child is at the level of advancement for his or her age cohort
- the correlation between school performance and the amount of work done by the child
- the quality of the educational facilities at the disposal of the student

Further follow-up investigation on this issue is recommended.

The tasks in which family children are employed were examined from the perspective of Article 3(d) of Convention 182.

- Among the activities undertaken by family children, cocoa pod breaking was the most commonly reported. Whether or not this poses a safety risk depends on if the child uses a machete to open the cocoa pod. This is apparently not uncommon, but detailed information on this practice was not gathered. Its inclusion in a risk analysis of the portfolio of tasks undertaken by children is recommended.
- Clearing cocoa farms was reported by less than 4% of the sample producers, but can be a high-risk activity particularly for younger children. For the 18 producers, who provided additional information, the mean amount of labor supplied was the equivalent of 165 six-hour days. The finding albeit from a small subsample of producers, of the significant role played by girls of age 10 to 14 years for this activity in a sector that has traditionally been considered men's domain is particularly remarkable. For the younger of these children, the employment is not recommended and an information campaign to discourage its practice should be considered.
- Slightly less than one percent of households indicated the employment of family children in applying pesticides on cocoa farms.

Most problematic is the employment of children in the application of pesticides. This involves several labor tasks, including carrying water, mixing and spraying chemicals, and cleaning up. Information on the exact nature of the child's involvement was not determined and requires detailed field investigations and risk analysis in order to clarify the situation and develop appropriate educational materials and IPM approaches.

On the basis of these findings, a sensitization campaign is recommended to inform about the potential hazards posed by pesticides and clearing cocoa plantations when children are employed.

Campaigns and other interventions targeting family children should be focused on larger farms, which reported the employment of children at a frequency nearly twice that of small producers. Both clearing and pesticide application were higher among this group. The employment of family children also increased among households with larger endowments of family labor. Regional producers in the Western region most frequently employed family children.

Sensitization materials should be distributed through channels that are already interacting with farmers and can identify the larger farmers with large families, who are more likely to employ children. These channels should include extension agents, farmer organizations, exporters, and their market intermediaries. The relatively high literacy among Ghana cocoa producers offers the potential for the use of written media.

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Introduction

A baseline survey of the major cocoa-growing regions in Ghana was conducted to provide information necessary for the implementation of the STCP. It forms part of activities that were approved during the regional implementation workshop held from 22 to 26 May 2000 in Accra, Ghana. The survey is designed to provide information needed for formulating effective projects and to assist in monitoring and assessing project impacts.

The overall goal of the STCP program in West Africa is: to improve the well-being smallholder farmers through the development of sustainable tree crop systems that increase productivity, generate income, conserve biodiversity, use natural resources sustainably and offer stable socially responsible development prospects for producers and their workers.

It constitutes coordinated efforts made by industry, governments and research, development and conservation agencies to facilitate the improvement of smallholder systems based on tree crops in Africa.

The objectives of STCP are to promote public- and private-sector partnerships in order to provide stakeholders with an organizational framework and policy environment that is necessary to:

- maintain increased productivity of high quality tree crop products, over the long term, with an emphasis on farm rehabilitation and reclamation of deforested land
- improve efficiency in the marketing chain, so that it delivers fair prices to farmers and quality products to end users
- make African tree crop products competitive in international markets
- improve the socioeconomic situation of farmers and their workers
- conserve the natural resource base

Following the Ghana workshop, journalistic accounts revealed slavery-like practices and trafficking involving children on cocoa plantations of West Africa. To assist in addressing this highly complex issue of child labor abuses in the cocoa sector of West Africa the STCP solicited the expertise of the International Programme on the Elimination of Child Labor (IPEC) of the ILO. The guiding framework for the child labor investigations and interventions of the STCP is ILO Convention 182 concerning the Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labor.

Articles 3(a) and 3(d) of Convention 182 proscribe “all forms of slavery or practices similar to slavery such as the sale and trafficking of children, debt bondage and serfdom and forced or compulsory labor” and “work which, by its nature or the circumstances in which it is carried out is likely to harm the health, safety, or morals of children.” Paragraph 1 of

Article 4 notes that “the type of work referred to under Article 3(d) shall be determined by national laws or regulations or by the competent authority, after consultation with the organization of employers and workers concerned taking into consideration relevant international standards in particular Paragraphs 3 and 4 of the Worst Forms of Child Labor Recommendations 1999.”

Given this new context, the labor practices section of the STCP baseline survey was significantly amended and expanded following extensive consultation with the ILO and implemented in the field from October to November 2001. The specific objectives of the survey in regards to child labor are to:

- Determine the type, extent, and magnitude of child labor utilized in the cocoa sectors of Cameroon, Nigeria, Ghana, and Côte d’Ivoire with particular regard to the issues raised in Articles 3(a) and 3(d) of ILO Convention 182.
- Provide information needed for designing effective interventions for addressing the issue of child labor in the pilot projects currently under development.

To efficiently address the program objectives, a pilot phase of efforts is being developed that will provide a framework for implementing and measuring the feasibility and impact of technical interventions and services aimed at raising the social and economic circumstances of workers, households, and communities involved in cocoa production. The focus of the pilot phase will be a series of integrated community-based projects (one each in Cameroon, Ghana, Guinea and Nigeria, and three in Côte d’Ivoire) to be implemented with a range of stakeholders including farmer organizations, research and extension, marketing agents, NGOs, and child advocacy groups. The findings from the baseline survey will be used to target and develop appropriate interventions to meet local needs. A key part of the pilot phase is to implement child labor interventions and get trafficking and migration programs focusing and serving the pilot project areas. Each pilot project is in the process of planning interventions aimed at: (a) strengthening farmer organizations, (b) implementing technical packages to increase productivity and enhance environmental services, (c) establishing child labor programs and (d) developing trade and information systems.

The goal of these pilot phase interventions is to create the capacity and motivation for smallholder farmers in the region to form strong associations and viable businesses. This outcome should be founded on productive cropping systems and environmentally friendly and socially responsible production techniques that do not lead to additional deforestation or entail abusive labor practice. The purpose is to provide smallholder farmers in the region with an integrated package of services, which would increase their awareness of child labor issues and their knowledge of crop production techniques including appropriate pest and disease control. The pilot projects will also seek to improve the management of natural resources and the conservation of biodiversity. It is also expected that participating farmers would be provided with greater access to training, extension, finance, markets, and information to facilitate the formation of farmer-owned businesses.

In Ghana, the STCP baseline survey focused on cocoa produced in the Western, Ashanti, Eastern, and Brong Ahafo regions of Ghana which together account for approximately 90% of national production.

The survey questionnaire addressed six areas;

1. The agricultural system and rural livelihoods (demographics, other enterprise, farm size, capital inventory)
2. Rural service provision (input markets, credit markets, market and production information, rural organization)
3. Tree stocks by age, replanting, uprooting, and new planting
4. Agronomic practices and output by plot
5. Labor practices
6. Postharvest practices and marketing

The Ghana situation

Ghana is classified by the World Bank as a low-income economy. The population of Ghana is about 18.4 million with an annual growth rate of 2.6% (Ghana statistical service 2000). Population estimates show that about 57% of Ghana's population live in the rural areas. The largest urban centers are Accra and Kumasi with 1.65 million and one million inhabitants, respectively. Nearly half of all production in Ghana is agricultural, one of the most successful areas has been cocoa production. In terms of agricultural exports, cocoa remains the most important in terms of foreign exchange earnings. Smallholder farmers produce most of the cocoa grown. In 1995 cocoa output was 309 000 tonnes, the highest for 20 years. The situation has changed and now farmers complain that cocoa production is no longer good business. However, major reforms have taken place in the cocoa industry and it is expected that the cocoa industry will be on the road to recovery. Annual production has remained relatively constant over the last 20 years fluctuating between 100 000 and 120 000 tonnes and is produced almost exclusively on small family-owned farms.

Methodology

The study area

Producer sampling was restricted to the most important cocoa-producing administrative regions of Ghana, namely the Western, Ashanti, Eastern, and Brong Ahafo regions, which are the four most important cocoa-producing regions in the country. Together the administrative areas sampled in the four regions accounted for around 90% of national production distributed as follows: Western region 50%, Ashanti region 18%, Eastern region 12% and Brong Ahafo 10%.

The sample design

A sample of 1000 households was desired. The intended sampling universe was the population of rural farm households in the major cocoa-producing regions of Ghana including both cocoa-producing households (CPHs) and non-cocoa-producing households. A two-stage cluster sample design was proposed.

The sample size in each region was proportional to its cocoa production and within each region, the sampled number of producers was proportional to its cocoa production within its region. Thus, the sampling fractions were,

$$n_p = 1000 * Y_p / \sum Y_p$$

where,

n_p = the number of producers sampled in region p and $p = 1, 2, 3, 4$

Y_p = the annual production of cocoa in region p

a balanced cluster sample was implemented with the sample size at the second stage n_c between 12 households per village cluster. Thus a total of $1000/n_c = 84$ sample clusters were required. The number of clusters per region was equal to:

$$C_p = n_p / 12$$

where,

C_p = number of clusters sampled in region p

All villages in each administrative region were enumerated and the required number of villages randomly drawn without replacement.

Upon arriving in the village, the survey teams were instructed to enumerate with the aid of the village authorities all households in the village equal to N_c . And then using a randomly drawn starting number in the interval $[1, N_c/n_c]$ systematically sample every N_c/n_c household.

Survey implementation

Using administrative maps, the list of all villages in the targeted administrative regions were enumerated. From this list, the required sample fraction was selected randomly. The actual distribution of sampled clusters and households by administrative region are reported in

Table 1. The actual cluster size was not uniform, with the number of sampled households per cluster varying from 8 to 19. Six villages, which had been originally identified could not be reached because of impassable roads and were replaced from a list of randomly selected replacement villages. A total of 85 villages were visited.

The implementation of the survey at the second stage was not well controlled. In many cases, the systematic random sampling of all households in the village as described above was not implemented for a series of reasons. Upon arriving in the survey area, the teams visited the local village authorities and administrative officials to inform them of the survey

Table 1. Spatial distribution of sample across the four principal cocoa-producing regions of Ghana.

Region	Administrative divisions	No. of clusters sampled	No. of households sampled	Percentage of total
Western	Sefwi Wiaso			
	Juabeso-Bia			
	Bibiani			
	subtotal	46	550	54.1
Ashanti	Ahafo Ano south			
	Asante Akim north			
	Atwima			
	Amanise West			
	Ejuisu-Juabeng			
	Ahafo–Ano north			
	Mankranso			
	Bekwai			
	Nkawie			
	subtotal	17	204	20
Eastern	Birim North			
	East Akyem			
	Suhum Kraboa Coaltar			
	West akyem			
	Asamankese			
	Fanteakwah			
	subtotal	12	141	14.1
Brong Ahafo	Asunafo			
	Goaso			
	Asutifi south			
	Bechem			
	subtotal	10	105	11.8
	Total	85	1000	100

and its purpose and to fix a rendezvous for that village. At the time of the rendezvous, the team would often find that a group of producers had been assembled by the local village chief and were waiting to be interviewed. When this was the case, instead of insisting on the systematic selection from among all households in the village, the teams often acted opportunistically and drew a random sample from this group of producers.

This presents several potential biases. First of all the estimated proportion of cocoa versus non-cocoa-producing households on a regional basis can no longer be made as the village universe was no longer all farmers but rather a subset of only cocoa producers at least in some villages. Another potential bias lies in the tendency for the village authorities to invoke the higher profile cocoa producers, i.e., those with larger cocoa farms and greater production. This could potentially have led to an over sampling of large producers. However given that large farms have larger labor demands from the viewpoint of the survey objectives on child labor practices, such a bias, if it exists, may actually shed more light on potentially abusive forms of child labor practice.

One of the initial objectives of including all rural households in the sample design was to establish statistically reliable estimates of the proportion of cocoa-producing households in a given region. Another objective of this approach was to model the factors at the household level related to the decision to produce or not to produce cocoa. While the first objective is no longer possible given the sampling problem, the second can still be met, as 56 of the households in the sample did not produce cocoa (944 cocoa-producing households were interviewed versus 56 non-cocoa-producing households).

The field data collection began on 21 October and was completed on 18 November 2001. In terms of the cocoa agricultural calendar, this is an active period for harvesting and is the most labor-demanding period of the cocoa-growing season. Farmers in earlier months had applied fungicides to combat blackpod disease, which is positively correlated with the high rainfall typical of August–September.

Survey results

An overview of cocoa-producing households in Ghana

The survey was conducted in the four major producing regions of Ghana and this descriptive overview is given for these regions. These are:

Western region. Cocoa production has been expanding here in recent years and this is now the major producing region of Ghana. This is the humid forest area in Ghana with the lowest population pressures and has the most significant forest resources in the country.

Brong Ahafo region. This region is to the north of the Western region and is an area of savanna forest transition. This is agroclimatically a somewhat marginal area from the standpoint of getting adequate rainfall.

Eastern region. This is the oldest cocoa growing region in Ghana and was where the industry first developed over 100 years ago

Ashanti region. Also a relatively mature cocoa growing area with its regional capital in Kumasi.

The typical Ghanaian cocoa producer earns his livelihood on a diversified family farm with the revenues from the cocoa enterprise accounting for about 55% of the household revenues (Table 2). Regionally, the cocoa enterprise attains the most importance in the Western region where it accounts for nearly two-thirds of household cash income.

The typical farmer has a family size of over nine persons, of whom almost 50% are children. As is common to rural life of nearly everywhere in the world, children are expected to help out on the farm. Although the labor focus in this report is on children's contribution to the cocoa enterprise, children on these diversified farms help out with innumerable

Table 2. Demographic profile of cocoa-producing households and cocoa revenue share by region in Ghana, 2000–2001.

	Region				Overall mean	Prob.
	Western n = 541	Brong Ahafo n = 93	Eastern n = 133	Ashanti n = 175		
Family size (no.)	9.5	10.0	9.0	9.2	9.4	0.557
Children (< 18 years) (no.)	4.5	5.3	4.4	4.3	4.5	0.148
School enrollment children (%)	72	78	71	81	75	0.032
Education of HH (years)	8.2	9.1	9.0	7.9	8.3	0.047
Age of household head (years)	43	51	49	48	46	< 0.001
Cocoa revenue share (%)	63	46	49	43	55	< 0.001

Table 3. Land resources by region as estimated by sampled farmers.

	Region				Overall mean	Prob.
	Western n = 541	Brong Ahafo n = 93	Eastern n = 133	Ashanti n = 175		
	hectares					
Annual/food crop fields	1.40	2.17	1.20	1.68	1.51	0.009
fallow fields	1.10	1.23	1.23	1.50	1.21	0.446
forest land	0.86	0.61	0.77	1.48	0.95	0.156
cocoa area (productive)	6.22	6.77	2.87	4.71	5.52	< 0.001
cocoa area (young)	1.04	0.59	0.31	0.50	0.79	< 0.001
total farm size	9.90	8.99	5.74	8.57	8.95	< 0.001

farm chores, from weeding the cassava field to fetching water for the household. At the same time, most of these children are in school, in part thanks to the revenues earned from cocoa sales. School enrollment rates (includes those children not yet of school going age i.e., infants to three to four years old) are relatively high with three in every four children enrolled and slightly higher rates seen among sample producers in the Brong Ahafo and Ashanti regions. This high enrollment reflects the value placed on education by the relatively literate sample producer who has over eight years of education himself.

In addition to cocoa, most households produce food crops with the area cropped per farm equal to 1.5 ha on average. Food crops are typically produced using a fallow rotation system where the land is left idle from two to seven years depending on the land resources of the producer (Table 3). At the start of the cycle, the fallow is slashed and burned before cropping for several years after which it is again abandoned to fallow. The mean fallow area is about 1.2 ha and does not show a lot of variation across the cocoa-producing households in the four regions. The production area in mature cocoa per farm averages 5.5 ha per farm while that of newly planted cocoa (< 4 years of age) averages 0.79 ha. Cocoa farms are largest in the Western and smallest in the Eastern region. Farmers in the Eastern region had the smallest overall farm sizes. Yields were the highest in the Eastern region (Table 4). As the cocoa-producing area here is smaller on average than other regions, the family labor input on a per ha basis (as measured by adult labor equivalents) is nearly double the level seen in the Western region where yields are significantly lower. Agronomically, soils in this region may also have a higher inherent soil fertility. The total quantity produced ranged from a mean of 644 kg per producer in the Ashanti region to a mean of 1.1 tonne in the Western region.

In terms of pesticide use, insecticides were used with more regularity than fungicides. Farmers in the Western region reported their use more frequently than those in the other regions. Herbicides which are a technological alternative to slashing with machetes in planta-

Table 4. Variation in agronomic and production parameters of cocoa cropping systems across the four principal cocoa-producing regions in Ghana, 1999–2000 production.

	Region				Overall mean	Prob.
	Western n = 541	Brong Ahafo n = 93	Eastern n = 133	Ashanti n = 175		
Yield (kg/ha)	202	149	320	168	207	0.001
Adult labor equivalents per ha	2.3	2.7	4.1	3.5	2.8	< 0.001
Quantity of cocoa produced (kg)	1 097	866	736	644	940	0.001
Insecticide use (% of HHs)	40	29	23	19	34	< 0.001
Insecticide sprayings (#)	1.40	0.64	0.84	0.55	1.12	< 0.001
Fungicide use (% of HHs)	27	19	17	17	23	0.011
Fungicide sprayings (#)	0.82	0.80	0.31	0.42	0.70	< 0.001
Weedings (#)	2.7	1.9	2.1	1.8	2.5	< 0.001
Fertilizer use (% of HHs)	2.9	0.0	1.4	0.5	2.0	0.06
Total fungicide expense (cedi)	38 526	21 585	9 410	17 504	29 692	0.004
Total insecticide expense (cedi)	77 862	34 095	21 135	22 586	57 316	< 0.001
Fungicide expense (cedi/ha)	6 978	2 667	5 079	3 983	5 746	0.125
Insecticide expense (cedi/ha)	17 189	9 964	9 364	7 459	13 616	0.006
“Organic” producers (% of HHs)	41	56	61	63	49	< 0.001
Mean plantation age (yr)	10.3	18.4	16.0	16.5	13.0	< 0.001
Shade index (0 = none, 3 = high)	0.92	1.29	1.40	1.34	1.10	< 0.001

tions were not reported by any producer. Fertilizer use was also extremely limited, reported by only 2 % of the producers interviewed. On the basis of the agrochemical use reported, nearly half of Ghana’s producers were growing *de facto* organic cocoa.

An important determinant of labor demand on a cocoa farm is the plantation age and the degree of canopy closure. Young plantations are typically more weedy and require more frequent slashing than a mature farm in which the canopy has closed and limited sunlight inhibits the growth of the underbrush.

Regionally, the reported mean age of the farmer’s tree stock was significantly lower in the Western region, reflecting the recent expansion of the cocoa production in this area. It is also noted that the reported number of weedings in the Western region was significantly higher than in other regions reflecting the need for more weed control on younger cocoa farms. The productivity of cocoa tree stocks exhibits a vintage nature because potential yield changes with the age of the treestock rising with age until a plateau is reached and then declining with age. The start of the decline in productivity depends on numerous factors including how much stress is placed on the tree and the level of shade in the plantation. There has been much debate in recent years over the question of shade in cocoa plantations.

In the 1970s and 1980s, much of the forests of Côte d'Ivoire and Ghana were converted to full sun systems planted with improved Amazonian cocoa varieties. This system has proven to be productive at least until the fertility of the slashed and burned forest is not used up. However, with time, the stock of soil nutrients are exported in the form of cocoa beans and yields can decline. The producers were asked to qualitatively evaluate the level of shade in their plantations. On the basis of this evaluation, it would appear that cocoa farms in the Western region have significantly less shade than those elsewhere. Whether this is because they are relatively younger plantations in which the shade (often furnished by fruit trees and other comestible tree species) has not yet had time to develop or because they are full sun systems looking to exploit the still abundant stock of biomass based nutrients was not ascertained.

Labor types and demand in the cocoa sector of Ghana

The initial step in the interview on labor allocation was to establish the type of labor used. Nine categories of labor type were identified *a priori*:

Own labor: the producer's own labor input

Extended family labor: work provided by members of the producer's extended family

Paid casual labor: workers hired on a piece rate or daily basis for a particular task

Reciprocal labor: nonmonetary labor exchange between the producer and a group of other producers where tasks are undertaken together by the group. Normally, this involves adult workers although in certain cases the producer may enlist the participation of family children in the labor exchange as well

Spouses' labor: work contribution by the household head's spouses

Family child labor: work contribution by the children residing in the household

Sharecropping: the supply of labor by a third party in exchange for a share of the harvest proceeds (typically, one-third in Ghana)

Paid extended family labor: defined as paid workers hired on a piece rate or daily basis who belong to the producers' extended family

Paid salary labor: paid workers hired on a semipermanent basis for multiple tasks associated with the production of cocoa and paid either a monthly salary or a lump sum at the end of harvest

The producer was asked to identify for each labor category whether or not this labor type was employed in the seven major labor tasks associated with cocoa production. These labor tasks are:

Clearing/weeding the understorey of the cocoa farm. This task is typically undertaken twice a year, once in May/June and again prior to the harvesting season in September/October. The typical practice is to slash the vegetative growth at ground level using a sharp machete. Depending on the amount of undergrowth and canopy closure, clearing one hectare typically requires between 0 to 7 person days of labor. Given an average farm size of around 6 hectare, (5 hectare productive and 1 ha, newly established) the sample producer would require between 36 and 84 person days of labor annually for clearing. A labor-saving alternative to slashing is to apply herbicides, which has in the past been recommended by

research and extension especially on newly established farms. No one however, in the sample reported the use of herbicides.

Agrochemical (pesticide) application. Because of cocoa blackpod disease and capsid insects, Ghanaian producers spray fungicides and insecticides although at lower intensity relative to other cocoa-growing areas such as Cameroon. Approximately one in three producers indicated spraying fungicides between two and three times annually. Insecticides were more commonly used, reported by slightly over half the sampled producers and were sprayed between three and four times. For the purposes of modeling the labor demand facing the representative Ghanaian producer, it is assumed that the plantation is sprayed once with fungicide and twice with insecticide. It is estimated that one person with a backpack sprayer can apply fungicides/insecticides to approximately 0.5 ha per work day. Thus, the average Ghanaian producer would require 36 person days for applying pesticides. Other than fungicide and insecticide, an extremely limited number of producers were also applying fertilizers (1.8% of producers).

Harvesting cocoa pods. When the pods are ripe, they are harvested and transported to a central location within or at the edge of the plantation. The removal of the cocoa pod from the tree requires some experience to be able to identify ripe from unripe pods and is typically undertaken by adults. Children and adolescents will often assist in collecting the harvested pods and then transporting them to a central location in the plantation. To produce 940 kg of marketable cocoa beans (the mean quantity sold per producer in the sample) would require harvesting about 25 000 cocoa pods. It is estimated that one person can harvest approximately 650 pods/day, so a total of 39 person days would be required to harvest the cocoa produced by the mean producer.²

Cocoa pod breaking. After the cocoa pods have been harvested, they are then broken open and the wet beans separated from the mucilage of the pod prior to fermentation. At a rate of 2000 pods/person/day, a total of 13 person days would be required.

Field transport. After the wet beans have been separated from the pods, they are transported to where they will be fermented and dried. In most cases, transport is to the farmers' concession back in the village. To produce 940 kg of dry marketable cocoa requires transporting approximately 2300 kg of fresh beans. The mean travel time reported by producers in the survey from the plantation to the home is 45 minutes. Assuming that one person could carry 50 kg of fresh beans per trip taking two hours per roundtrip, the labor demand for transport is calculated at 15 person days.

Fermentation. After the cocoa beans are separated, they are fermented for four to seven days depending on the producer. The process involves mixing the beans every 48 hours.

Drying. Once the cocoa fermentation is complete, it is dried. Ghanaian cocoa is sun dried and can take anywhere from five days to two weeks depending on climatic conditions. It is estimated that fermentation and drying of 940 kg would require 15 person days of labor.

²A cocoa pod weighs between 200 and 1000 g, the average pod weighs 400 g and yields 35–40 g of marketable dried cocoa beans. The ratio of marketable cocoa beans to fresh cocoa beans is 0.40 to 0.44. It is estimated that 16 person days of labor are required to ferment and dry one tonne (Ministère de la Coopération Française, 1993. *Memento de l'Agronome*, p. 972).

Several of the labor tasks outlined above are likely to be hazardous for children of a certain age and could potentially be classified as a “worst form” of child labor under Article 3(d) of the ILO Convention 182. The tasks, which may pose harm to the health of child workers, include the mixing and application of pesticides, the clearing of cocoa farms, and the breaking of cocoa pods with sharpened machetes. The former can lead to pesticide intoxication while the latter two tasks are often the cause of serious lacerations. The practice of opening cocoa pods with a machete is not recommended from a quality aspect because of the injury that could occur to the cocoa bean if the cut is too deep. Injured beans will not properly ferment.

The above tasks form the bulk of the labor demands on a cocoa farm. For the representative Ghanaian producer operating 6 ha of cocoa and producing 940 kg, the total annual labor demand for the tasks listed above is calculated at 178 person days (Fig. 1). It is estimated that approximately 50% of the total annual labor demand occur during the harvest season from October to December. Using a coefficient of 189 person days per tonne of cocoa, the national estimate for total labor demand in the cocoa sector is 75.7 million person days (representing full-time employment³ for approximately 379 000 workers). In addition to these tasks, the producer will intermittently prune back cocoa shoots and regulate the shade canopy. He will also, usually, in conjunction with the other labor tasks, conduct “phytosanitary harvests” which consist of removing diseased pods from the tree and from the plantation to reduce inoculum. In practice, however, most farmers are less than rigorous regarding the proper disposal of diseased pods.

Cocoa production in Ghana has been increasing steadily at a rate of almost 4% a year since the mid-1980s (Fig. 2). The trend in cocoa production when technology remains unchanged is a very good indicator of changes in total labor demand within the sector. From

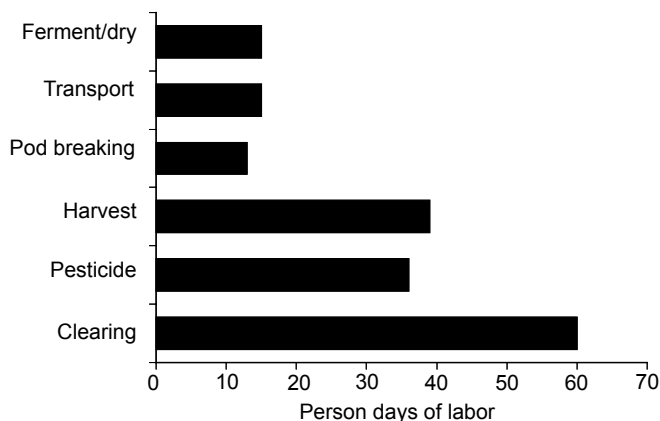


Figure 1. Estimated annual labor demand by task for a representative cocoa farm producing 940 kg, Ghana, 2001.

³Full time employment is here defined as 200 person days of labor per year.

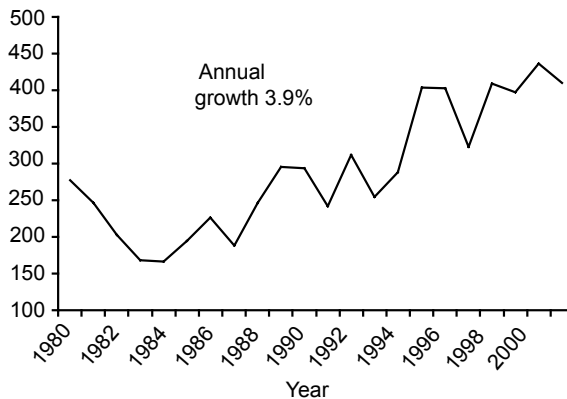


Figure 2. Production trend in Ghana cocoa sector, 1980–2001. (Source: FAOSTAT).

Figure 2, the conclusion is that the total labor demand has been increasing more rapidly than the natural population growth rate. This rapid increase in labor demand could lead to disequilibria in regional labor institutions compounded by the even more rapid growth in cocoa output (6%) in neighboring Côte d'Ivoire. Institutional changes in arrangements such as sharecropping, the use of casual and migrant labor, and their implications for child workers were not explored in depth in this study but may warrant additional study.

Once the overall portfolio of labor types by tasks utilized by the producer was established, the interview then sought to establish *inter alia*:

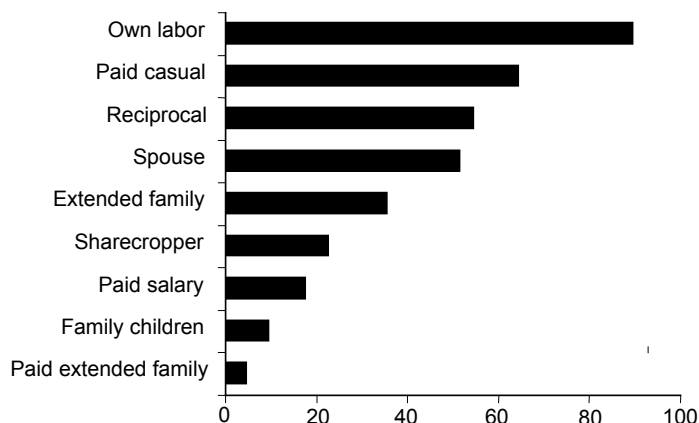
- (a) the time allocation and school enrollment rate of family children employed in the various tasks of producing cocoa
- (b) the number of casual workers employed by task and their remuneration (including those under the age of 18)
- (c) the incidence of child workers among salaried workers and the conditions under which they worked

The incidence of children among salaried workers is of particular interest to the STCP because it was this type of worker category in which cases of child trafficking and child labor abuses bordering on slavery as defined by Article 3(a) of ILO Convention 182 have been reported.

In Ghana as in Cameroon, there was no reported incidence of a permanent worker under the age of 18 among the producers interviewed. It must be noted, however, that the issue of child workers has become extremely sensitive and there is a significant risk of underreporting by producers. To further substantiate this finding, a follow-up investigation involving direct worker interviews not in the presence of the producer should be attempted during the peak labor demand season (September–November).

The reporting that follows concentrates largely on issues of child labor within the family and on the incidence of casual workers under the age of 18.

Figure 3. Utilization of various labor types by cocoa-producing households in Ghana (n = 938).



Variation in the types of labor utilized

Producers' own labor is the most frequently utilized labor type, as was found to be the case in Cameroon and Côte d'Ivoire (Fig. 3). Of the five most frequently reported labor types, four involve either family members or the non-monetary institution of reciprocal labor. The employment of family children was reported by 10% of cocoa-producing households. On the basis of these findings, it would appear that family labor is the most important labor input in relative terms for the sample producer.

Casual hire, reported by 65% of households, was the most frequent type of monetary labor institution. Less than one in four producers reported a sharecrop arrangement and 22% of the cocoa farms in the sample were reported to be under such arrangement. The most typical agreement was a 50–50 share between the owner and worker. The category "salaried worker" is of particular interest because this was the labor category in which children were reported as being severely mistreated by journalists. Almost 20% of households reported its use.

The concern with the worst forms of child labor necessitates a task by task examination to see to what extent cocoa-producing households (CPHs) are employing family children in potentially hazardous activities (Fig. 4). Heading the list is cocoa pod breaking. Whether or not this task poses any risk depends on whether or not the child uses a machete to break open the cocoa pod (this is not the recommended means of opening the pod because of the potential damage to the beans). The practice is anecdotally reported to be common and further in-field risk analysis of this practice may be required. Field transport, if not involving excessively heavy loads should not pose serious problems. Drying is not an arduous task and can not be considered as a worst form of child labor.

The two principal "worst form" issues are the employment of children for clearing the cocoa plantation and in applying pesticides. The employment of children for clearing cocoa farms was reported by 3.5% of cocoa-producing households. This task is most often

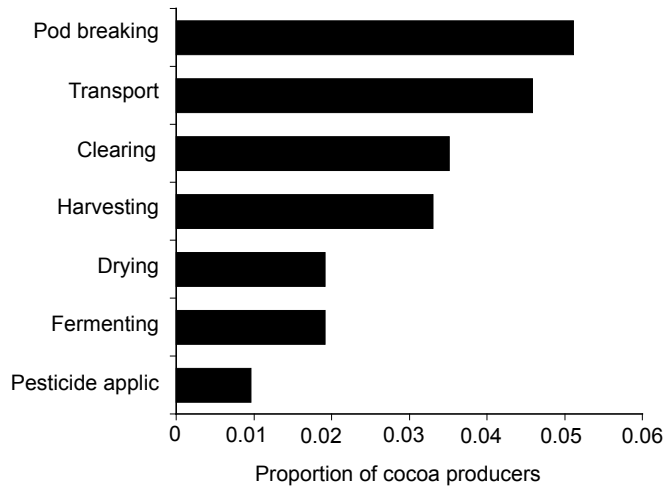


Figure 4. Reported employment of family children by task, Ghana, 2001.

achieved using a sharpened machete with a steel blade of approximately 50 cm in length and weighing approximately 600–700. Using a machete poses risks to both children and adults. Under the hot and humid conditions of the tropics, the perspiration generated by slashing often causes the grip to slip resulting in frequent and serious lacerations. The clearing of cocoa fields by adolescents of 15–17 years of age for several hours at a time is however considered a normal part of the social development process. Engaging younger children in slashing is a more serious issue. We examine the time allocation and age of family children employed in these tasks.

Less than one percent of households indicated the employment of family children in applying pesticides on cocoa farms. This was lower than in Cameroon or Nigeria and perhaps reflects a lower incidence of cocoa black pod disease. However, it is reported that Ghana recently imported a significant number of knapsack sprayers which will be distributed to cocoa farmers as it fights against the more virulent *Phytophthora megakarya* species of the disease. This development could lead to the increased involvement of children.

There are several tasks associated with applying pesticides, the most physically strenuous of which is fetching water for mixing with the pesticides. If children are employed in this task, there may be risk that they come in contact with pesticides during the mixing of the product in the knapsack sprayer. More worrisome is the actual application of pesticides which are often applied with little or no protective clothing. Cleaning up sprayers and/or transporting the sprayer can also expose the child to chemicals. The interview did not go into the details of pesticide application and the role of children in this activity requires further risk analysis and field investigation.

Regional variation in the types of labor utilized

Table 5 provides an overview of the frequency with which the various types of labor described above were mobilized across regions in Ghana. The use of family children, reciprocal labor,

Table 5. Frequency variation in producer utilization of labor types by region, Ghana, 2000–2001.

	Region					Prob.
	Western n = 539	Brong Ahafo n = 93	Eastern n = 132	Ashanti n = 174	All n = 938	
Own labor supply	93	86	87	84	90	0.003
Paid casual labor	68	70	59	57	65	0.028
Reciprocal labor supply	66	45	43	35	55	< 0.001
Spouses' labor supply	63	40	45	30	52	< 0.001
Extended family labor supply	38	31	43	30	37	0.066
Sharecropping arrangements	26	15	19	21	23	0.047
Paid salaried labor	18	23	15	19	18	0.526
Family child labor supply	12.9	6.5	2.3	6.3	10	< 0.001
Paid extended family labor	5.2	3.2	7.5	2.3	5	0.154
Mean no. of labor types used (#)	3.9	3.2	3.2	2.9	3.6	< 0.001

sharecropping, and spouse labor is significantly higher in the Western region of Ghana and we see that farmers here also mobilize more types of labor than in other regions. To some extent, these regional findings may be related to the variation in size of farm by region. There are no significant regional differences in the use of salaried labor.

Examining the regional employment of family children in the potentially hazardous tasks discussed above indicates that they are also more frequently employed in the Western Region although significant differences only exist for pod breaking (Figure 5).

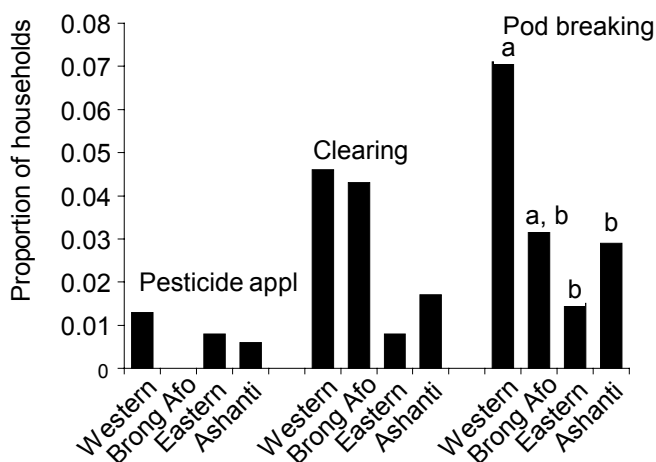


Figure 5. Households employing family children in potentially hazardous activities, Ghana, 2001.

Labor variation and the size of cocoa enterprise

As cocoa farm size increases, the amount of labor required must increase proportionally if yields are to be maintained. How farmers mobilize these additional labor resources is an important question, particularly as it pertains to the use of child labor. Sample producers were classified into three roughly equal groups by the size of total cocoa holding.⁴

The groups are defined as:

small ≤ 2.83 ha of cocoa	n = 326
2.8 ha < medium ≤ 6 ha	n = 319
large > 6 ha	n = 297

The frequency of family child labor use doubles among cocoa-producing households in the largest size class relative to the smallest (Table 6). This tendency has been seen in Cameroon, Nigeria, and Côte d'Ivoire. Larger cocoa farms are more likely to employ family children. The employment of family children in the application of pesticides increases to 2% and their participation in slashing cocoa farms rises to slightly over 5% among the largest class of producers (Table 7). Family children are also employed more for pod breaking among large farmers and the mean number of tasks in which children are employed increases with farm size.

The producers' own labor declines among CPHs falling in the largest size class. Similarly, the percentage of households relying only on family or reciprocal labor declines among CPHs in the largest class. Conversely, significant increases are found in the frequencies of sharecropping arrangements, casual labor, and paid extended family labor.

Table 6. Frequency variation in producer utilization of labor types by producer class, Ghana, 2000–2001.

	Size class				Prob.
	Small	Medium	Large	All	
N=	325	315	296	936	
Own labor	91	93	87	90	0.023
Paid casual labor	56	69	72	65	< 0.001
Reciprocal labor	42	59	66	55	< 0.001
Spouses' labor	45	55	56	52	0.007
Extended family labor	35	38	36	36	0.684
Sharecropping arrangements	13	21	36	23	< 0.001
Paid salaried labor	11	16	28	18	< 0.001
Family child labor supply	6	11	12	10	0.053
Paid extended family labor	3.4	5.6	5.4	5	0.328
Mean no. of labor types used (#)	3.0	3.7	4.0	3.6	< 0.001

⁴ Total cocoa holding includes both productive and nonbearing newly established holdings.

Table 7. Frequency variation in producer utilization of reciprocal labor groups, casual labor, and family child labor employment by task and size of cocoa farm, Ghana, 2000–2001.

N =	Size class			Mean	Prob.
	Small 325	Medium 315	Large 296		
Reciprocal labor group					
Weeding	1.8	4.8	3.7	3.4	0.121
Pesticide application	1.2	2.5	0.7	1.5	0.147
Harvest pods	6.2	10.8	11.1	9.3	0.054
Break pods	35.7	51.1	57.8	47.9	<.001
Field transport	28.3	41.3	40.5	36.5	0.001
Fermentation	4.9	3.8	6.1	4.9	0.431
Drying	1.8	1	1.7	1.5	0.614
Casual labor employment					
Weeding	50.5	60.3	62.8	57.7	0.004
Pesticide application	22.8	30.8	39.5	30.8	< 0.001
Harvest pods	14.5	20	28.7	20.8	< 0.001
Break pods	6.2	8.6	11.1	8.5	0.085
Field transport	8.9	14.6	18.2	13.8	0.003
Fermentation	3.7	4.8	8.4	5.6	0.027
Drying	2.8	3.2	4.1	3.3	0.662
Family child labor					
Pod breaking	3.1	5.1	7.4	5.1	0.049
Field transport	2.8	5.1	6.1	4.6	0.127
Clearing	2.2	3.5	5.1	3.5	0.145
Pod harvesting	2.2	3.5	4.4	3.3	0.291
Fermentation	1.2	1.6	3.0	1.9	0.227
Drying	0.6	2.2	3.0	1.9	0.080
Pesticide appl	0.3	0.6	2.0	1.0	0.069
Mean no. of child tasks (#)	0.123	0.216	0.311	0.214	

The principal mobilization in Ghana as size increases is of four types of labor: paid casual, reciprocal labor exchange, paid salaried workers, and sharecropping. We also see that there is some increase in the frequency of family labor use (spouses' labor and child labor, although the increase in the latter is not significant at the 5% level). In contrast, the frequency of own labor input decreases with the largest class, perhaps reflecting an increase in the managerial role of the producer as size increases. The use of extended family labor resources remains roughly constant across size classes ranging from 35 to 38%.

Frequencies on a task-by-task basis for casual labor, reciprocal exchange groups, and family child labor are reported in Table 8. Reciprocal labor is an important labor source

Table 8. Frequency variation in producer utilization of labor types by productivity class, Ghana, 2000–2001.

	Yield class				Prob.
	Low	Average	High	All	
N =	296	294	299	889	
Own labor supply	90	91	90	90	0.866
Paid casual labor	64	64	68	66	0.467
Reciprocal labor supply	48	59	64	58	< 0.001
Spouses' labor supply	51	56	53	53	0.458
Extended family labor supply	37	36	39	38	0.667
Sharecropping arrangements	20	26	24	23	0.275
Paid salaried labor	18	18	20	19	0.684
Family child labor supply	9	8	13	10	0.111
Paid extended family labor	4.0	7.5	3.6	5.1	0.062
Mean no. of labor types used (#)	3.4	3.6	3.8	3.6	0.008

principally at harvest time for breaking pods and for field transport, and to a lesser degree for harvesting pods and is more employed by larger producers. In contrast, casual workers are mainly employed for clearing/weeding of plantations but are also used to some extent in applying pesticides, harvesting pods, and field transport. Casual labor utilization increases significantly in all these tasks among larger farmers.

Labor allocation and productivity

The productivity of the producer's cocoa production system, which is closely correlated with gross revenues per hectare, can potentially influence the choice of labor used. Low levels of productivity per ha through their effect on gross revenues can constrain the producer's labor options and lead to greater utilization of low-cost labor choices and/or family labor.

Sample producers were classified into productivity groups according to the level of their cocoa yield per ha in 2000/2001. Yields were calculated by dividing the total quantity of cocoa produced by the productive cocoa area, defined as all cocoa land of greater than three years of maturity.⁵

The productivity groups are defined as follows:

Low	≤ 95 kg/ha	n = 298
95 kg/ha <	average ≤ 207 kg/ha	n = 294
High	> 207 kg/ha	n = 303

The relationships between type of labor utilization and productivity (measured as yield per hectare of mature (> 3 years old) cocoa) are reported in Table 8. With the exception

⁵Although some improved hybrid cocoa can begin to bear at 2 to 3 years, majority of Ghanaian farmers were not utilizing such varieties.

of reciprocal labor exchange there are no significant differences in the reported frequencies by productivity class.

Reciprocal labor is most often used at harvest for opening the cocoa pods and to a lesser degree for field transport. On a task-by-task basis, 16% more high-yield producers reported using this labor type for pod breaking and 15% more for field transport than was the case for low yield producers ($P < 0.01$). These differences in harvest and postharvest labor mobilization are related to the higher levels of total output achieved among higher productivity farmers that were seen in Table 4 and cannot be causally linked to higher productivity levels.

Variation in the types of labor utilized across household labor endowments

The household's endowment of family labor may influence its choice of labor type. Specifically, the use of hired casual labor, paid salary, and sharecropping arrangements should be less observed among households with a large endowment of family labor and conversely, family child labor use would increase.

Sample cocoa producers were grouped into three classes of adult labor equivalents according to their demographic composition in 2001. Adult male labor equivalents were calculated as:

$$\text{ADEQUIV} = \text{MEN18-54} + 0.8 * \text{MEN54} + 0.8 * \text{WOMEN18-54} + 0.7 * \text{WOMEN54} + 0.5 * \text{CHILD}$$

Where: ADEQUIV = the number of adult male labor equivalents in the household

MEN18-54 = the number of men living in the household between the ages of 18 and 54

MEN54 = the number of men over the age of 54

WOMEN18-54 = the number of women living in the household between the ages of 18 and 54

WOMEN54 = the number of women over the age of 54

CHILD = the number of family members under the age of 18

The household labor endowment groups are defined as follows:

scarce	≤ 5 ADEQUIVs	n = 304
5 ADEQUIVs <	average ≤ 8.4 ADEQUIVs	n = 345
	abundant > 8.4 ADEQUIVs	n = 351

The use of family children does increase marginally but the differences in reported frequency are not statistically significant (Table 9).

Producers with large labor endowments were more likely to use extended family labor which most likely reflects a larger extended family as well. The labor institution of sharecropping actually increases in reported frequency among households with greater labor endowments. Explanation for this apparent anomaly may be linked to the use of abundant household labor for the creation of more cocoa farms, which are then placed under a sharecropping arrangement.

Table 9. Frequency variation in producer utilization of labor types by household labor endowment class, Ghana, 2000–2001.

	Household endowment of labor				Prob.
	Scarce n = 276	Average n = 323	Abundant n = 339	All n = 938	
Own labor supply	90	91	89	90	0.852
Paid casual labor	63	67	65	65	0.665
Reciprocal labor supply	51	58	55	55	0.234
Spouses' labor supply	45	60	49	52	0.001
Extended family labor supply	28	37	42	36	0.003
Sharecropping arrangements	18	22	28	23	0.005
Paid salaried labor	17	18	19	18	0.707
Family child labor supply	6	11	11	10	0.068
Paid extended family labor	4	6	4	5	0.722
Mean no. of labor types used (#)	3.3	3.7	3.7	3.6	< 0.001

Time employment of family household children

Further information on the use of child labor from within the household was sought from the 90 producers who indicated the use of family child labor. Information on the number of children by age and gender employed in each of the various tasks indicated was gathered. Sixty-three of these producers provided the information summarized in Tables 12 and Annex Tables 1 to 6.

Overall, the mean producer employing family child labor (10% of the sample) received an estimated 96 days of labor annually from all children employed in the production of cocoa. Older children (10–17 years) accounted for 90% of the total labor supplied. The amount of labor supplied by girls was almost equal to that supplied by boys (Fig. 6).

In aggregate, information was gathered on 103 tasks that had been given to family children by the sixty-three producers interviewed. Nineteen of the 63 producers indicated employing between one and three family male children below the age of 10. These children assisted their parents on average, slightly less than five hours a day, usually for one or two days a week. These activities were seasonal, lasting between four and 30 weeks during the year with an average of about 11 weeks. This assistance was typically lent during weekends; all producers but one, indicated that the child worked only for one or two days a week. Twelve producers reported employing girls in this age category. For these producers, the hours employed and weeks worked were comparable to those for boys.

In the 10–14 age group, 47 respondents reported using between one and four family male children in this category. These boys worked on the average a little less than five hours a day. In a week, they put in between one and five days averaging two days in a week and 15 weeks in a year. A slightly lower number of respondents reported employing their female children in the same age category in the various tasks. The number of hours worked a day by the females was slightly higher than that of the males, a little over five hours but the number of weeks worked on the average was similar to that of the boys.

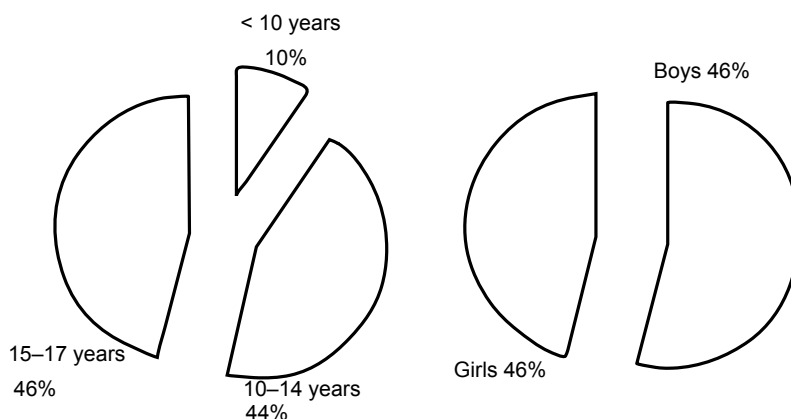


Figure 6. Proportion of family child labor supplied by age and gender groups, Ghana, 2001.

Eighty-three percent of the producers using family child labor reported employing between one and four male children in the family who were in the 15–17 year age group. This was the most frequently reported age-gender group. These children also spent on the average about five hours a day working. This is similar to their younger counterparts. They also worked a comparable number of weeks as those in the younger categories. The girls in this age group on the average worked over five hours a day. However, compared to their male counterparts, they usually work 12 weeks in a year.

In general, the proportion of these producers employing children of both sexes increased with the age of the child; that is, more producers reported employing 15–17 year old children than the other two age categories. While the average number of hours worked and the average number of days worked per week are essentially unchanging across age groups, there is a noticeable jump in the average number of weeks worked by the two oldest age groups (about 15 weeks) vis-à-vis the youngest (about 11 weeks).

An important question is whether or not working for one's parents means the child is unable to attend school. The indications are that by and large, this is not the case among family children employed by Ghanaian cocoa producers. Table 10 indicates that in all but one category (i.e., girls of 10–14 years), more than 90% of working children were also attending school. There is a slight tendency for the enrollment rate to decline with an increase in age and also we see slightly lower rates in the case of girls versus boys but overall, the picture with regards to schooling is positive.

It should be noted however, that the question posed (enrolled or not enrolled) is a relatively coarse indicator. Still unanswered questions include:

- i. whether or not the child is at an appropriate age for his or her class level
- ii. what is the correlation between school performance and the amount of work done by the child, or
- iii. the question of quality of the educational facilities available

Annex Table 1 presents the descriptive statistics on involvement of children in the various age categories and gender groups in slashing cocoa farms, which was highlighted earlier in

Table 10. Employment and enrollment of household children overall labor tasks by producer (N = 103).

	N Reporting	Min.	Max.	Mean	Std dev.
Boys under 10 employed	19	1	3	1.26	0.65
Enrollment rate (proportion in school)	16	0.667	1	0.98	0.08
Hours worked per day	16	0.5	8	4.84	2.90
Days worked per week	16	1	7	1.94	1.44
Weeks worked per year	12	4	30	10.58	9.66
Girls under 10 employed	13	1	2	1.15	0.38
Enrollment rate (proportion in school)	12	0	1	0.92	0.29
Hours worked per day	11	0.5	8	5.05	2.82
Days worked per week	11	1	2	1.46	0.52
Weeks worked per year	10	1	30	12.10	10.32
Boys 10–14 yrs employed	47	1	4	1.66	0.94
Enrollment rate (proportion in school)	46	0	1	0.91	0.29
Hours worked per day	41	0.5	8	4.81	2.38
Days worked per week	43	1	5	1.47	0.88
Weeks worked per year	39	1	52	15.05	14.82
Girls 10–14 yrs employed	44	1	3	1.48	0.73
Enrollment rate (proportion in school)	42	0	1	0.89	0.30
Hours worked per day	42	1	9	5.29	2.40
Days worked per week	41	1	7	1.61	1.39
Weeks worked per year	39	1	52	14.92	15.96
Boys 15–17 yrs employed	52	1	4	1.79	1.02
Enrollment rate (proportion in school)	50	0	1	0.91	0.28
Hours worked per day	49	1	8	4.96	2.27
Days worked per week	48	1	5	1.38	0.79
Weeks worked per year	48	1	52	15.06	16.82
Girls 15–17 yrs employed	42	1	3	1.60	0.80
Enrollment rate (proportion in school)	40	0	1	0.92	0.22
Hours worked per day	40	1	11	5.94	2.73
Days worked per week	39	1	6	1.64	0.96
Weeks worked per year	36	2	51	12.08	12.05

this report as a potentially hazardous labor for children. For the 18 producers who provided information, the mean amount of labor supplied by family children was 165 six-hour days per producer with an average of 1.6 children under the age of 15 so engaged. Applying this result to the 3.5% sample frequency leads to a sample estimate of 53 children under the age of 15 employed in slashing cocoa farms. Assuming that the sample findings are representative, the estimate of the number of children under 15 years of age employed by their parents for clearing cocoa farms nationally is 23 990⁶. The proportionate distribution of this labor across the various age gender groups is given in Figure 8. The important input of girls from age 10–14 years is particularly remarkable. The reported instances indicate that in general, children are employed only on a seasonal and part time basis in this activity, working on average between 4 and 8 hours a day for one or two days a week. The males in the younger age groups spent slightly more hours working on the average than the older ones but worked fewer days than the older boys. Clearing cocoa plantations with a sharp machete is a potentially hazardous occupation for any worker but especially for children whose muscles may not have adequately developed.

Annex Tables 2–4 provide similar results for child labor in pod breaking, harvesting, and field transport. No information was obtained from those producers (n = 9) who indicated the employment of children in pesticide application. However, if we assume that the mean number of children employed per producer in pesticide application is equal to the overall weighted mean of 1.6 children per task, the estimate of the number of children employed in the sample is 15. Extrapolation from the sample results in an estimate of 6807 children involved in pesticide application nationally.

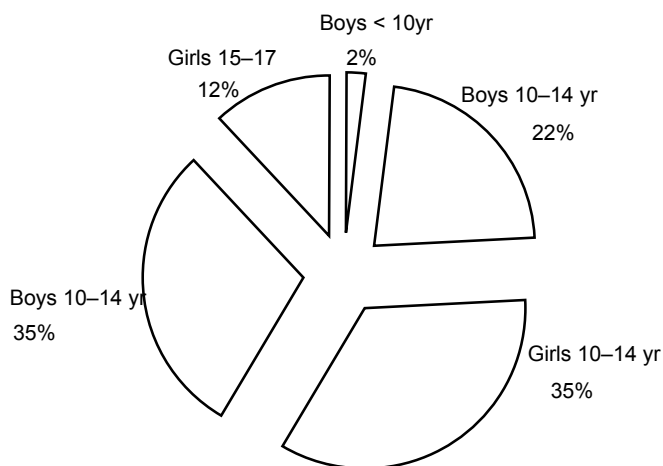


Figure 7. Proportion of child labor for slashing cocoa farms supplied by age-gender groups in Ghana, 2001 (n = 18).

⁶The preferred expansion factor for extrapolation is N/n , where N = population size, and n = sample size. However as statistically precise estimates of the producer population in Ghana were not available, we are forced to use an alternative expansion factor, Q/q where Q = reported tonnage of cocoa exported during the sample year, and q is the sum of the tonnes tonnage of sample. Using $Q = 390\ 000$ tonnes, and $q = 870$ tonnes the expansion factor is 454.

Remuneration and employment of casual workers

Paid casual labor is one of the principal means of mobilizing labor as farm size increases and was the next most frequently cited type of labor used after the producers' own labor input. The producer interviews explored in more depth, certain parameters of this labor component.

Producers were asked to indicate for each task in which casual labor was employed:

- (a) the number of workers employed
- (b) the number of those workers under the age of 18
- (c) the total amount paid for that task

The results by task are presented in Table 11. Overall, only five producers indicated using casual workers under the age of 18, with two reporting their use on harvesting cocoa, all five on weeding, one reporting use for transport from field, two reporting their use for pod breaking, and three for pesticide application.

The application of pesticides is an especially hazardous activity that requires proper protective clothing, equipment, and strict adherence to guidelines. It is not recommended for children. The reported cases of children under the age of 18 applying pesticides although low, indicates the need for sensitization among rural communities on the proper handling of pesticides and the risks that they may pose to the health and safety of children and adults alike.

Salaried labor

The employment of salaried labor was reported by slightly under 20% of the sampled producers with its use significantly higher among farmers with large farms. This is the category of labor, which has been associated with labor abuses of the type proscribed by Article 3(a) of ILO Convention 182 in other cocoa-producing countries of West Africa. Because of this, there was a particular interest in the incidence of child workers employed under this statute. In Ghana, as already cited above, there was no reported use of salaried child workers nor were there any reported cases of women being employed as cocoa workers.

Among the producers providing additional information on this labor type ($n = 69$), a mean of 5.2 workers were employed however the mode was one worker and the median producer employed three. No significant difference was found in the number of workers across cocoa farm size classes. The mean remuneration on a per day basis was 11 100 cedi (US\$1 = 7500 cedi) while the median pay was 6250 cedi per day. The mean pay per day was negatively correlated with the length of the employment period ($r = -0.371$, $p = 0.017$). Workers engaged for 12 months tended to receive lower pay than those engaged for a shorter period of time.

Table 11. Mean number of casual workers employed, total value of their remuneration, and mean remuneration per worker by labor task, Ghana, 2000–2001.

	Mean	c.v.	Median	Min	Max	N of cases
Pod-breaking						
No. of casual workers employed	9.0	0.62	10	1	30	141
No. of workers under 18 years	4.5	0.79	4.5	2	7	2
Total value of remuneration (cedi)	94 289	1.75	47 500	5000	900 000	90
Value of remuneration per worker	34 723	3.51	6000	667	800 00	83
Transport from field						
No. of casual workers employed	8.0	0.96	6	1	70	143
No. of workers under 18 years	9.0	0.00	9	9	9	1
Total value of remuneration (cedi)	110 732	3.17	40 000	3000	3 500 000	112
Value of remuneration per worker	15 395	1.16	9000	71	100 000	93
Clearing/weeding						
No. of casual workers employed	6.8	1.35	4	1	100	522
No. of workers under 18 years	5.2	0.71	4	1	10	5
Total value of remuneration (cedi)	255 345	2.33	150 000	300	12 000 000	547
Value of remuneration per worker	60 994	1.56	35 000	50	1 020 000	490
Harvesting of pods						
No. of casual workers employed	4.7	0.97	3	1	30	162
No. of workers under 18 years	3.0	0.00	3	3	3	2
Total value of remuneration (cedi)	94 654	1.19	52 000	8000	800 000	162
Value of remuneration per worker	40 769	2.31	15 000	1000	800 000	145
Pesticide application						
No. of casual workers employed	2.3	0.98	2	1	20	220
No. of workers under 18 years	2.7	0.22	3	2	3	3
Total value of remuneration (cedi)	78 906	1.38	50 000	2000	1 000 000	235
Value of remuneration per worker	44 300	1.33	30 000	1000	500 000	209
Drying						
No. of casual workers employed	4.6	1.09	1	1	12	8
No. of workers under 18 years	–	–	–	–	–	0
Total value of remuneration (cedi)	102 571	1.73	50 000	8000	500 000	7
Value of remuneration per worker	85 8571	2.14	10 000	5000	500 000	7

Conclusions and recommendations

A survey of cocoa producers was conducted in the four major producing regions of Ghana which are the Western, Brong Afoho, Ashanti, and Eastern regions to provide information necessary for the implementation of the Sustainable Tree Crops Program (STCP). The survey is designed to provide information needed for formulating effective projects and to assist in monitoring and assessing project impacts.

In mid-2001, accounts of slavery-like practices and trafficking involving children on cocoa plantations of West Africa were reported in the media. To assist in addressing this highly complex issue, the STCP solicited the expertise of the International Programme on the Elimination of Child Labor (IPEC) of the International Labor Organization (ILO).

Given this new context, the labor practices section of the STCP baseline survey was significantly amended and expanded to address the issue of child labor and implemented in the field from October to November 2001. The specific objectives of the survey on child labor are to

- Determine the type, extent and magnitude of child labor utilized in the cocoa sectors of Cameroon, Nigeria, Ghana, and Côte d'Ivoire with a particular regard to the issues raised in Articles 3(a) and 3(d) of ILO Convention 182.
- Provide information needed for designing effective interventions for addressing the issue of child labor abuse in the pilot projects currently under development.

This report has focused on child labor findings in Ghana.

The guiding framework for the child labor investigations and interventions of the STCP is ILO Convention 182 concerning the Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labor. Articles 3(a) and 3(d) of Convention 182 proscribe “all forms of slavery or practices similar to slavery such as the sale and trafficking of children, debt bondage and serfdom, and forced or compulsory labor” and “work which, by its nature or the circumstances in which it is carried out is likely to harm the health, safety, or morals of children.” It is within this perspective that the analysis has been conducted.

The typical Ghanaian cocoa producer earns his livelihood on a diversified family farm with the revenues from the cocoa enterprise accounting for about 55% of the household revenues. Annual production among the sample producers was slightly under one tonne. Regionally, the cocoa enterprise attains the most importance in the Western region where it accounts for nearly two-thirds of household cash income.

Family size is relatively large. The mean farmer manages a household of slightly over nine, with children accounting for nearly 50% of household members.

By and large, Ghanaian cocoa farmers were themselves literate and saw to the education of their children. School enrollment rates (includes those children not yet of school going age i.e., from infants to three to four year olds) are relatively high with three in every four children enrolled.

The scale of operation in Ghanaian cocoa farming is small. The average total farm size is under 9 ha in area. Cocoa accounts for about 6.3 ha and food and associated fallow fields around 1.7 ha. Slightly less than one ha of long bush fallow, secondary forest land was indicated by the average producer. The area in mature producing cocoa per farm averaged 5.5 ha per farm while that of newly planted cocoa (< 4 years) was slightly less than one ha. Cocoa holdings were largest among sample producers in the Western and Brong Afoho regions.

The frequency of pesticide use in Ghana is lower than in Nigeria or Cameroon. Almost half of all producers sampled indicated no use of either fungicides or pesticides. The lower use in Ghana would be expected to lower the overall incidence of pesticide intoxication among children. However, reports of a government campaign to reduce cocoa black pod disease may lead to increased exposure risk if care is not taken.

Cocoa production is, at the macroeconomic level, a labor-absorbing sector for the Ghanaian economy. For the representative Ghanaian producer producing a total of 940 kg, the total annual labor demand for the major tasks associated with cocoa production is estimated at 178 person days. The national estimate for total labor demand in the cocoa sector is 75.7 million person days (representing full time employment for approximately 379 000 workers).

Growth in the cocoa labor demand has been rapid in recent years. Cocoa production has been increasing steadily at a rate of almost 4% a year since the mid-1980s. The trend in cocoa production when technology remains unchanged is a very good indicator of changes in total labor demand within the sector. At this rate of growth, labor demand has been increasing more rapidly than the natural population growth rate. This rapid increase could lead to disequilibria in regional labor institutions (compounded by the even more rapid growth in cocoa output in neighboring Côte d'Ivoire). Institutional changes in arrangements such as sharecropping, the use of casual labor, migrant labor, and their implications for child workers were not explored in-depth in this study but may warranted additional study.

In Ghana as in Cameroon, there was no reported incidence of a permanent worker under the age of 18 among the producers interviewed. The incidence of children among salaried workers is of particular interest to the STCP because it was this type of worker category in which cases of child trafficking and child labor abuses bordering on slavery have been reported as defined by Article 3(a) of ILO Convention 182. It must be noted, however, that because of the sensationalism with which these situations were reported, the issue of child workers has become extremely sensitive and there is a significant risk of under reporting by producers. To further substantiate this finding, a follow-up investigation involving direct worker interviews not in the presence of the producer should be conducted during the peak labor demand season (September to November).

Family labor was the most frequently employed type of labor consisting of the producer, his wife, and extended family members. Of the five most frequently reported labor types, four involve either family members or the nonmonetary institution of reciprocal labor.

Sharecropper is an important labor type especially among cocoa producers with larger holdings. Overall, 23% of producers reported its use. The status and well-being of children

living in the households of this significant labor group was not investigated. The institution of sharecropping was most prevalent in the Western region and was seen to increase significantly among larger producers. As interviews were only conducted with producers, there is a recommendation for further investigation into the livelihood strategies of sharecroppers and their children as in Nigeria and Cameroon. Family children were the eighth most frequently employed labor type engaged by 10% of producers interviewed. This was the most frequently reported type of child labor. Other than this, there were five reported cases of children hired as casual labor.

For households who employed them, family children contributed a large input. The mean producer employing family child labor (10% of the sample) received an estimated 100 days of labor annually from all children employed. Older children (10–17 years) accounted for 90% of the total labor supplied. The amount of labor supplied by girls was almost equal to that of boys.

The impact of employment on enrollment rates of children was slight. Over 90% of both girls and boys of school age working on cocoa farms were enrolled. But enrollment is only a weak indicator of cognitive development. Still unanswered are questions concerning:

- (i) whether or not the child is at the level of advancement for his or her age cohort
- (ii) the correlation between school performance and the amount of work done by the child
- (iii) the quality of the educational facilities at the disposal of the student

Further follow-up investigation on this issue is recommended.

The tasks in which family children are employed were examined from the perspective of Article 3(d) of Convention 182.

- Among the activities undertaken by family children, cocoa pod breaking was the most commonly reported. Whether or not this poses a safety risk depends on if the child uses a machete to open the cocoa pod. This is apparently not uncommon but detailed information on this practice was not gathered. Its inclusion in a risk analysis of the portfolio of tasks undertaken by children is recommended.
- Clearing cocoa farms was reported by less than 4% of the sample producers, but can be a high-risk activity particularly for younger children. For the 18 producers, who provided additional information, the mean amount of labor supplied was the equivalent of 165 six-hour days. The finding albeit from a small subsample of producers, of the significant role played by girls of age 10–14 years for this activity in a sector that has traditionally been considered men's domain is particularly remarkable. For the younger of these children, the employment is not recommended and an information campaign to discourage its practice should be considered.
- Slightly less than one percent of households indicated the employment of family children in applying pesticides on cocoa farms.

Most problematic is the employment of children in the application of pesticides. This involves several labor tasks, including carrying water, mixing and spraying chemicals, and cleaning up. Information on the exact nature of the child's involvement was not determined and requires detailed field investigations and risk analysis in order to clarify the situation

and develop appropriate educational materials and IPM approaches.

On the basis of these findings, a sensitization campaign is recommended to inform about the potential hazards posed by pesticides and clearing cocoa plantations when children are employed. Campaigns and other interventions targeting family children should be focused on larger farms, which reported the employment of children at a frequency nearly twice that of small producers. Both clearing and pesticide application were higher among this group. The employment of family children also increased among households with larger endowments of family labor. Regional producers in the Western region most frequently employed family children.

Sensitization materials should be distributed through channels that are already interacting with farmers and can identify the larger farmers with large families, who are more likely to employ children. These channels should include extension agents, farmer organizations and exporters, and their market intermediaries. The relatively high literacy among Ghana cocoa producers offers the potential for the use of written media.

Annex

Annex 1. Employment and enrollment of household children in clearing/weeding by producer (N = 18).

	N	Min	Max	Mean	Std dev.
	reporting				
Boys under 10 employed	2	1	1	1.0	0.0
Enrollment rate (proportion in school)	2	1	1	1.00	0.0
Hours worked per day	2	4	7	5.5	2.1
Days worked per week	2	1	2	1.5	0.7
Weeks worked per year	2	12	30	21.0	12.7
Girls under 10 employed	0	–	–	–	–
Enrollment rate (proportion in school)	0	–	–	–	–
Hours worked per day	0	–	–	–	–
Days worked per week	0	–	–	–	–
Weeks worked per year	0	–	–	–	–
Boys 10–14 yrs employed	7	1	3	1.6	0.8
Enrollment rate (proportion in school)	7	0	1	0.71	0.49
Hours worked per day	6	4	5	4.3	0.5
Days worked per week	7	1	5	2.1	1.7
Weeks worked per year	5	12	52	39.2	17.8
Girls 10–14 yrs employed	10	1	3	1.6	1.0
Enrollment rate (proportion in school)	10	0	1	0.90	0.3
Hours worked per day	10	2	8	5.5	2.3
Days worked per week	9	1	6	2.0	2.0
Weeks worked per year	8	8	52	34.8	20.4
Boys 15–17 yrs employed	12	1	4	1.8	1.0
Enrollment rate (proportion in school)	12	0	1	0.83	0.4
Hours worked per day	11	2	8	4.5	1.6
Days worked per week	11	1	5	1.5	1.2
Weeks worked per year	11	3	52	35.9	19.0
Girls 15–17 yrs employed	5	1	3	2.0	1.0
Enrollment rate (proportion in school)	5	0.5	1	0.90	0.2
Hours worked per day	4	5	6	5.3	0.5
Days worked per week	4	1	2	1.5	0.6
Weeks worked per year	3	3	42	27.0	21.0

Annex 2. Employment and enrollment of household children engaged in pod breaking by producer (N = 25).

	N reporting	Min	Max	Mean	Std dev.
Boys under 10 employed	7	1	2	1.1	0.4
Enrollment rate (proportion in school)	5	1	1	1.0	0.0
Hours worked per day	5	1	8	4.0	2.9
Days worked per week	5	1	2	1.6	0.5
Weeks worked per year	4	4	30	10.8	12.8
Girls under 10 employed	7	1	2	1.1	0.4
Enrollment rate (proportion in school)	6	0	1	0.8	0.4
Hours worked per day	6	1	8	4.8	2.8
Days worked per week	6	1	2	1.5	0.5
Weeks worked per year	5	4	30	13.6	12.4
Boys 10–14 yrs employed	14	1	4	2.0	1.0
Enrollment rate (proportion in school)	14	0	1	0.9	0.3
Hours worked per day	13	2	8	4.6	1.9
Days worked per week	13	1	3	1.3	0.6
Weeks worked per year	13	4	30	12.2	10.3
Girls 10–14 yrs employed	8	1	3	1.5	0.8
Enrollment rate (proportion in school)	8	0	1	0.9	0.4
Hours worked per day	8	2	8	5.6	2.3
Days worked per week	8	1	3	1.4	0.7
Weeks worked per year	8	4	24	8.8	6.8
Boys 15–17 yrs employed	15	1	4	1.6	1.1
Enrollment rate (proportion in school)	15	0	1	0.9	0.3
Hours worked per day	14	2	8	5.5	2.1
Days worked per week	14	1	2	1.4	0.5
Weeks worked per year	14	2	36	11.4	12.2
Girls 15–17 yrs employed	10	1	3	1.4	0.7
Enrollment rate (proportion in school)	10	0	1	0.9	0.3
Hours worked per day	10	1	11	6.4	2.7
Days worked per week	10	1	3	1.9	0.7
Weeks worked per year	10	2	36	11.8	11.6

Annex 3. Employment and school enrollment of household children in transportation of cocoa beans by producer (N = 22).

	N	Min	Max	Mean	Std dev.
	Reporting				
Boys under 10 employed	4	1	3	2.0	1.2
Enrollment rate (proportion in school)	4	0.667	1	0.92	0.2
Hours worked per day	4	0.5	8	3.9	3.3
Days worked per week	4	1	2	1.8	0.5
Weeks worked per year	2	4	5	4.5	0.7
Girls under 10 employed	3	1	2	1.3	0.6
Enrollment rate (proportion in school)	3	1	1	1.00	0.0
Hours worked per day	2	0.5	4	2.3	2.5
Days worked per week	2	1	2	1.5	0.7
Weeks worked per year	2	1	4	2.5	2.1
Boys 10–14 yrs employed	9	1	4	1.6	1.0
Enrollment rate (proportion in school)	8	1	1	1.00	0.0
Hours worked per day	8	0.5	8	3.4	2.6
Days worked per week	8	1	2	1.3	0.5
Weeks worked per year	7	1	10	4.6	2.7
Girls 10–14 yrs employed	6	1	2	1.2	0.4
Enrollment rate (proportion in school)	4	1	1	1.00	0.0
Hours worked per day	5	1	8	3.4	2.8
Days worked per week	5	1	2	1.2	0.4
Weeks worked per year	5	1	10	4.4	3.4
Boys 15–17 yrs employed	14	1	4	2.1	0.9
Enrollment rate (proportion in school)	13	1	1	1.00	0.0
Hours worked per day	13	1	8	3.2	2.4
Days worked per week	12	1	2	1.1	0.3
Weeks worked per year	12	1	10	3.5	2.3
Girls 15–17 yrs employed	10	1	3	2.0	0.9
Enrollment rate (proportion in school)	9	0.333	1	0.87	0.3
Hours worked per day	9	1	8	3.5	2.6
Days worked per week	8	1	3	1.5	0.8
Weeks worked per year	7	2	5	3.1	1.1

Annex 4. Employment and enrollment of household children in harvesting by producer (N = 10).

	N reporting	Min	Max	Mean	Std dev.
Boys under 10 employed	3	1	1	1.00	0.00
Enrollment rate (proportion in school)	3	1	1	1.00	0.00
Hours worked per day	3	1	8	5.00	3.61
Days worked per week	3	2	7	3.67	2.89
Weeks worked per year	2	4	5	4.50	0.71
Girls under 10 employed	0	–	–	–	–
Enrollment rate (proportion in school)	0	–	–	–	–
Hours worked per day	0	–	–	–	–
Days worked per week	0	–	–	–	–
Weeks worked per year	0	–	–	–	–
Boys 10–14 yrs employed	5	1	3	1.80	1.10
Enrollment rate (proportion in school)	5	0	1	0.80	0.45
Hours worked per day	5	4	8	6.60	1.95
Days worked per week	5	1	3	1.60	0.89
Weeks worked per year	5	5	24	10.80	7.79
Girls 10–14 yrs employed	7	1	3	1.29	0.76
Enrollment rate (proportion in school)	7	0	1	0.86	0.38
Hours worked per day	7	4	8	5.86	1.57
Days worked per week	7	1	3	1.43	0.79
Weeks worked per year	6	5	24	10.67	6.98
Boys 15–17 yrs employed	3	1	4	2.00	1.73
Enrollment rate (proportion in school)	3	0	1	0.67	0.58
Hours worked per day	3	4	8	6.00	2.00
Days worked per week	3	1	2	1.67	0.58
Weeks worked per year	3	4	24	11.00	11.27
Girls 15–17 yrs employed	6	1	3	1.50	0.84
Enrollment rate (proportion in school)	6	1	1	1.00	0.00
Hours worked per day	6	5	11	7.17	2.32
Days worked per week	6	1	2	1.50	0.55
Weeks worked per year	5	4	16	9.00	4.80