



*Research to Nourish Africa*

# OCCUPATIONAL SAFETY AND HEALTH ON GHANAIAN COCOA FARMS

**BASELINE REPORT**



**SANDER MUILERMAN**

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**IITA – SUSTAINABLE TREE CROPS PROGRAM**

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**IITA Ghana**

International Institute of Tropical Agriculture (IITA)  
PMB L56  
Accra - Ghana  
tel.: +233 302 508 777

**International mailing address:**

IITA Ghana  
c/o IITA, Carolyn House  
26 Dingwall Rd  
Croydon, CR9 3EE, England

**Online:**

[www.iita.org](http://www.iita.org)  
email: [iita@cgiar.org](mailto:iita@cgiar.org)  
[www.cgiar.org](http://www.cgiar.org)

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Cover photo: © S. Muileman:

*A young cocoa farm worker on a cocoa farm, carrying a cutlass.*



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## **ABOUT IITA**

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The International Institute of Tropical Agriculture (IITA) was founded in 1967 as an international agricultural research institute with a mandate for improving food crop production in the humid tropics and to develop sustainable production systems. It became the first African link in the worldwide network of agricultural research centers of CGIAR, formed in 1971.

IITA's mission is to enhance the food security, income and wellbeing of resource-poor people in sub-Saharan Africa by conducting research and related activities to increase agricultural production, improve food systems, and sustainably manage natural resources, in partnership with national and international stakeholders.

## **ABOUT STCP**

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The Sustainable Tree Crops Program (STCP) ran for 10 years until 2012 and constituted a coordinated and innovative effort by farmers and producer organizations, industry and trade, national governments, research institutes, the public sector, policymakers, donors and development agencies to facilitate the improvement of smallholder agricultural systems based on tree crops in West and Central Africa. The goal of the STCP has been to improve the economic and social wellbeing of smallholders and the environmental sustainability of tree crop farms in West and Central Africa.

The STCP was hosted by the International Institute of Tropical Agriculture and its achievements have been scaled out to several similar public and private sector programs.

## **ABOUT CGIAR**

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The CGIAR is a global research partnership that unites organizations engaged in research for sustainable development. CGIAR research is dedicated to reducing rural poverty, increasing food security, improving human health and nutrition, and ensuring more sustainable management of natural resources.

Research is conducted through a portfolio of CGIAR Research Programs that addresses today's most pressing agricultural research-for-development challenges. It is carried out by the 15 centers which are members of the CGIAR Consortium in close collaboration with hundreds of partner organizations, including national and regional research institutes, civil society organizations, academia, and the private sector.

## CONTENTS

|   |      |
|---|------|
| Figures and Photos.....                               | v    |
| Acronyms and Abbreviations.....                       | vi   |
| Acknowledgements.....                                 | vii  |
| Executive Summary.....                                | viii |
| <br>  |      |
| 1 Background.....                                     | 1    |
| 1.1 Introduction.....                                 | 1    |
| 1.2 The Need for Reliable Data.....                   | 2    |
| 1.3 Cocoa Farming and OSH Policy.....                 | 2    |
| 1.4 Scope of the Report.....                          | 3    |
| <br>  |      |
| 2 Survey Design.....                                  | 4    |
| 2.1 Preparatory Research.....                         | 4    |
| 2.2 Attribution of OSH problems to Cocoa Farming..... | 6    |
| 2.3 Sampling Strategy.....                            | 6    |
| 2.4 Survey Instruments.....                           | 8    |
| 2.5 Survey Implementation.....                        | 9    |
| <br>  |      |
| 3 OSH Hazards in Cocoa Production.....                | 11   |
| 3.1 Farm tools.....                                   | 11   |
| 3.2 Carrying and Lifting Loads.....                   | 11   |
| 3.3 Repetitive Strain Injuries.....                   | 12   |
| 3.4 Poor Posture.....                                 | 12   |
| 3.5 Agrochemicals.....                                | 12   |
| 3.6 Personal Protective Equipment (PPE).....          | 12   |
| 3.7 Vulnerable People.....                            | 12   |
| 3.8 Farm Environment.....                             | 13   |
| 3.9 Farm Emergencies.....                             | 13   |
| <br>  |      |
| 4 Presentation of Survey Results.....                 | 14   |
| 4.1 Survey Descriptive Statistics.....                | 14   |
| 4.2 The Research Area.....                            | 14   |
| 4.3 Demographics.....                                 | 15   |
| 4.4 Health.....                                       | 18   |
| 4.5 Pain.....   | 22   |
| 4.6 Illness.....                                      | 24   |
| 4.7 Injury.....                                       | 26   |
| 4.8 Agrochemicals.....                                | 30   |
| 4.9 Personal Protective Equipment (PPE).....          | 34   |
| 4.10 Losses.....                                      | 37   |
| <br>  |      |
| 5 Discussion of Survey Results.....                   | 38   |
| 5.1 Demographics.....                                 | 38   |
| 5.2 Health.....                                       | 39   |
| 5.3 Pain.....   | 41   |
| 5.4 Illness.....                                      | 42   |
| 5.5 Injury.....                                       | 43   |
| 5.6 Agrochemicals.....                                | 44   |
| 5.7 Personal Protective Equipment.....                | 47   |
| 5.8 Losses.....                                       | 47   |
| 5.9 Recommendations.....                              | 48   |
| <br>  |      |
| References.....                                       | 49   |
| Annexes.....  |      |



## FIGURES AND PHOTOS

|   |    |
|---|----|
| Figure 1 - Surveyed communities (n=28).....   | 14 |
| Figure 2 - Age distribution by gender.....  | 15 |
| Figure 3 - Self-reported years of education .....   | 15 |
| Figure 4 - Marital status count.....  | 16 |
| Figure 5 - Immigrant count per region, incl. provenance .....                               | 16 |
| Figure 6 - Kind of farms worked on.....   | 17 |
| Figure 7 - Membership of an organization.....   | 17 |
| Figure 8 - Who makes decisions about health care? .....                                     | 18 |
| Figure 9 - Distribution % of NHIS coverage. ....  | 19 |
| Figure 10 - Time spent to get to medical facility. ....                                     | 19 |
| Figure 11 - Work performed during own or wives' pregnancy. ....                             | 20 |
| Figure 12 - Okay for a pregnant woman to continue work? .....                               | 20 |
| Figure 13 - Reported minimum age for a selection of farm tasks .....                        | 21 |
| Figure 14 - Experience negative pressure affecting health. ....                             | 21 |
| Figure 15 - Proportions of farmers experiencing pain during selected cocoa activities. .... | 22 |
| Figure 16 – Tingling, main affected body parts .....  | 23 |
| Figure 17 - Taking breaks to prevent muscle pain. ....                                      | 24 |
| Figure 18 - Experienced illnesses caused by cocoa farming. ....                             | 25 |
| Figure 19 - Suspected cocoa farming-related causes of impotence.....                        | 25 |
| Figure 20 - % injury during cocoa activities in last 2 yrs.....                             | 26 |
| Figure 21 - Most often injured body parts (2 yrs).....                                      | 27 |
| Figure 22 - Worst ever injured body parts.....  | 27 |
| Figure 23 - Main injuries caused by falls.....  | 29 |
| Figure 24 - Main Injuries caused by lifting/carrying .....                                  | 29 |
| Figure 25 - List of reported active ingredients.....  | 30 |
| Figure 26 - Direct involvement in mixing and/or spraying.....                               | 31 |
| Figure 27 - Techniques to assess mixture potency.....                                       | 31 |
| Figure 28 - Perceived direct health effects from pesticide application.....                 | 32 |
| Figure 29 - Reported first aid measures in case of poisoning.....                           | 33 |
| Figure 30 - Actual (and perceived best) storage location for farm chemicals.....            | 34 |
| Figure 31 - Knowledge and use of PPE on cocoa farm.....                                     | 35 |
| Figure 32 - Use and lack of PPE: clearing/weeding.....                                      | 35 |
| Figure 33 - Knowledge and use of PPE: application pesticides.....                           | 36 |
| Figure 34 - Knowledge and use of PPE: broadcast fertilizers.....                            | 36 |
| Figure 35 - Reported sick leave days lost to OSH issues.....                                | 37 |

|   |    |
|---|----|
| Photo 1. Cocoa farmers come together for experiential learning in a STCP farmer field school (FFS)..... | 1  |
| Photo 2 - Using a cell phone and online solution to collect data. (© Mobenzi.com).....                  | 9  |
| Photo 3 - Enumerator training on OSH hazards in cocoa farming and on mobile data collection .....       | 9  |
| Photo 4 - Cocoa farmer being interviewed by an enumerator using the mobile data collection tool.....    | 10 |
| Photo 5 - A cocoa farmer back from the farm with a heavy load of wet on her head .....                  | 11 |
| Photo 6 - A child in a cocoa community learns from a very young age how to handle a cutlass.....        | 13 |
| Photo 7 - The typical cocoa farmer is an aging male household head, often a migrant. (© R. Asare) ..... | 38 |
| Photo 8 - Example of NHIS member card (© www.NHIS.gov.gh).....  | 39 |
| Photo 9 - A bottle of 'schnapps'.....   | 40 |
| Photo 10 - Children of all ages help with chores, both on- and off-farm.....                            | 40 |
| Photo 11 - Cocoa farmers should regularly observe enough rest. ....                                     | 41 |
| Photo 12 - Local ladder (© IITA/STCP) .....   | 43 |
| Photo 13 - Babysleeping on a farm. (© IITA/STCP).....   | 45 |
| Photo 14 - The signpost of a dealer in agro-chemicals.....  | 45 |
| Photo 15 - Damaged personal protective equipment.....   | 47 |

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## ACRONYMS

|         |   |
|---------|---|
| ASC     | African Studies Centre  |
| CLP     | Cocoa Livelihoods Program   |
| CHOKOFA | Swedish Chocolate, Confectionery and Biscuit Manufacturers' Association |
| COCOBOD | Ghana Cocoa Board   |
| CSSP-II | Cocoa Sector Support Program (Phase II)                                 |
| EU      | European Union  |
| FFS     | Farmer Field School(s)  |
| FGD     | Focus Group Discussion(s)   |
| GDP     | Gross Domestic Product  |
| GHS     | Ghana Health Service  |
| (G)DHS  | (Ghana) Demographic Health Service                                      |
| IITA    | International Institute of Tropical Agriculture                         |
| ILO     | International Labor Organization  |
| KNUST   | Kwame Nkrumah University of Science and Technology                      |
| LBP     | Lower back pain   |
| MIT     | Massachusetts Institute of Technology                                   |
| NHIS    | National Health Insurance Scheme  |
| OSH     | Occupational Safety and Health  |
| PPE     | Personal Protective Equipment   |
| PPP     | Public-Private Partnership  |
| STCP    | Sustainable Tree Crops Program  |
| UNAIDS  | United Nations Program on HIV/AIDS                                      |
| USAID   | United States Agency for International Development                      |
| UL      | University of Leiden  |
| WCF     | World Cocoa Foundation  |
| WHO     | World Health Organization   |

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## EXECUTIVE SUMMARY

Cocoa farming is a hazardous occupation, just like many other types of farming. A general lack of quality data on occupational safety and health (OSH) issues in cocoa farming means the issue is under-exposed, making it difficult to estimate its socioeconomic impact and to plan interventions. OSH issues in Africa's agriculture in general, and in cocoa farming in particular, have received little research attention except for those of child labor and irresponsible pesticide use. With this report IITA/STCP seeks to provide broad baseline information on OSH issues in the cocoa sector in Ghana, based on both a quantitative survey and supplementary qualitative research techniques.

The survey focused on a sample of 420 adult cocoa farmers in four major cocoa producing regions of Ghana, using a multistage random sampling design. The survey questionnaire design – in the absence of existing formats for OSH surveys in developing countries – has been built on the basis of the IITA/STCP training manual on OSH for cocoa farmers, and on qualitative data coming out of semi-structured expert interviews and focus group discussions with farmers. The information and insight coming from those exchanges also served to put the survey results into context. An innovative mobile research tool was used to collect data and monitor the field work in real-time. It allowed for enumerator friendly skip-logic, the elimination of a data-entry phase, and the use of many open-ended questions where otherwise the use of a complicated paper questionnaire would have been needed. Much effort was put into distinguishing cocoa farm work from farm work for other crops.

In Ghana, in reality, no OSH rules and regulations exist that apply to the individual Ghanaian cocoa farmer. The typical cocoa farmer is an aging male household head, often a migrant, with low productivity and suboptimal access to information. Though cocoa farmers, on average, are content with their health situation, they lack knowledge on a number of key topics (proper use of agrochemicals and personal protective equipment, proper lifting techniques, the need to observe enough rest, etc.) that would help them to better recognize OSH issues and hazards.

Cocoa farming is conducted in a rural environment with basically no separation between the living and working spheres. General health problems, public hygiene, and OSH risks are therefore intertwined, putting cocoa farmers' health at risk. Cocoa farming puts considerable strain on farmers' bodies and minds in a variety of ways, unequally spread over the year, leading to unnecessarily high incidences of pain, discomfort, injury, and illness, as well as direct and indirect losses to the farmers' productive capacity. In addition, groups such as the elderly, children, adolescents, and pregnant women (including the unborn child) are vulnerable to a number of major OSH hazards. Community-based protective rules and norms are virtually non-existent as decisions are left to intra-household negotiations.

Many of the activities, behaviors, and tools associated with cocoa farming cause pain, repetitive strain injuries, and other uncomfortable conditions and illnesses. For example, 74% of cocoa farmers in this survey clearly demonstrated bad lifting techniques. Other problems included cuts from weeding, tool sharpening, or pod breaking, bites and stings, prick wounds, eye injuries, slips and falls, and injuries caused by falling objects.

About 52% of the respondents reported that they had injured themselves on the cocoa farm in the last 2 years in such a way that they needed to receive treatment. The average incidence of such injuries was 1.75 times in the last 2 years before the interview date (in the summer or autumn of 2011). One in ten respondents had been injured in this way more than five times in the last 2 years. Of the 63.3% of respondents who had sustained any kind of injury, by far the largest group (41%) injured themselves most seriously while weeding, followed by harvesting pods (6%). Some of these injuries forced the farmers to stop work for some time. Farmers were likely to sustain injuries both en route to their farms and in the farm environment. With some technical guidance and protective equipment, risks such as these could quite easily be reduced.

Today, almost all cocoa farmers use agrochemicals. Particularly also under the COCOBOD's high tech. program, the application of pesticides by smallholder cocoa farmers has increased tremendously over the last decade.



Agrochemicals are the source of the most severe OSH risks. Among the most alarming observations during the survey were the frequent presence of unprotected cocoa farmers and household members (including pregnant women and children) during spraying, the large percentage of cocoa farmers who touched farm chemicals with their bare hands, and the dangerous techniques cocoa farmers employ to assess the potency of farm chemical mixtures. The high prevalence of chemical OSH hazards, particularly when it comes to (EU-) banned agrochemicals (including DDT), raises important concerns about the health and safety of future generations in cocoa farming communities.

More than half of the cocoa farmers who did their own spraying reported that they had experienced one to five direct health effects from using agrochemicals, and one in five reported illness during or directly after spraying the cocoa farm. Many farmers would benefit from better information and training on the storage of farm chemicals and safe post-spraying re-entry times. The importance of the role of local farm chemical distributors in information provision cannot be overestimated.

The survey revealed that most cocoa farmers lack adequate knowledge about appropriate personal protective equipment (PPE). In addition, the non-availability of PPE and the lack of financial resources to acquire it result in a situation in which most cocoa farmers grossly under-protect themselves, in particular for more specific tasks such as the spraying of agrochemicals.

The cocoa farmers who took part in the survey reported making an average of 1.6 cocoa work-related visits/year to a doctor and the median farmer claimed that he lost a round 15 working days/year due to OSH-related pain, illness, and/or injury from cocoa farm work, with an estimated annual monetary loss of US\$110. The most striking recommendations coming out of this study include the following:

- The Ghana Health Services need to adopt the proper registration of OSH issues in all of its medical facilities, to arrive at better OSH measures for all occupations and a better understanding of the issues in all occupations.
- There is an intense need to raise the level of knowledge and change practices among cocoa farmers with regard to OSH issues through targeted packages of training and information, within classic public extension and information channels, through private sector involvement, and possibly by using training approaches, classic radio messages, and new ICT-based solutions.
- Interventions should target not only cocoa farmers, but also local agro-professionals such as sprayers, purchasing clerks, and agro-dealers. In particular, the positive role the agro-input dealers could play should not be underestimated.
- Relatively simple training messages, for example, about ergonomics, variation in tasks, proper rest-taking, and PPE, are expected to lead to important gains in cocoa farmers' health and safety, improvements in productive capacity and to an extent, also in their income.
- Communal action needs to be organized and supported to establish community policies within cocoa communities on what is acceptable and safe work for all major vulnerable groups.
- The largest hazards are related to agrochemicals. Where cocoa farmers do the spraying themselves, they need to be more aware about proper use and personal protection, and know that they should not allow any unprotected bystanders to be present. However, better still, the use of professionals to spray agrochemicals should be advocated in cocoa communities.
- Any improvement in the distribution and marketing of PPE to make items more easily available and/or more affordable at the community level, is eagerly awaited.
- Awareness needs to be raised about proper responses to emergency situations on the farm and about the dangers of the use of medical drugs and alcohol during (cocoa) farm work.

The data and recommendations from this study should help public, private, and non-profit actors throughout the cocoa value chain to make better informed decisions, design more effective policies, and provide more adequate support to cocoa farmers. Ultimately, it is hoped such developments will improve OSH conditions on cocoa farms, and thus advance the livelihoods of Ghanaian farmers in cocoa producing communities.

## 1 BACKGROUND

### 1.1 INTRODUCTION

The International Institute of Tropical Agriculture (IITA) is one of the world's leading non-profit research institutes in finding solutions for hunger, malnutrition and poverty. For 11 years it hosted the Sustainable Tree Crops Program (STCP). The STCP was a public-private partnership (PPP) platform including national Governments, international research institutes, development partners, and many cocoa industry partners, striving to increase agricultural production and to improve the livelihoods of tree crop farmers in five different countries in the West African forest belt. In Ghana, the STCP largely operated through the EU-supported *Cocoa Sector Support Program - Phase II (CSSP-II)*, whose goal was to contribute to sustainable cocoa production in Ghana. The program came to an end in March 2012.

One of the critical factors contributing to sustainable cocoa production is a healthy, productive work force. It is common knowledge that, in general terms, agriculture is a hazardous occupation – in fact, only mining involves more OSH risks (Tettey et al. 2010). In particular, the intensive use of machinery and of pesticides and other agrochemicals has increased the risks. Though the use of farm machinery doesn't apply much to smallholder farming of tree crops, the increased use of agrochemicals does certainly apply. Available data from developing countries show that there has been an increase in the accident rates in agriculture (ILO 2000), but reliable data specifically on farming tree crops, such as cocoa in West and Central Africa, are not available. In general, the ILO estimates that 4% of the world's GDP is lost through OSH problems (ILO 2012).

Over a period of 2 years, with funding support from the Swedish Chocolate, Confectionery and Biscuit Manufacturers' Association (CHOKOFA), the United States Agency for International Development (USAID), the World Cocoa Foundation (WCF) and individual chocolate companies and trade associations, the STCP developed, tested, and validated a farmer training program to minimize OSH issues. The actual pilot training was held within an ongoing cocoa farmer field school (FFS) program under the STCP.

The curriculum was based on the premise that, although it is not possible to eliminate all of the risks and hazards associated with cocoa farming, much can be done to protect the farmers from the hazards to which they might be exposed in the course of their farming activities. This report focuses on the OSH hazards, the incidence how this needs to be interpreted, and recommendations that can be made to reduce the risks.

Photo 1. Cocoa farmers come together for experimental learning in a STCP farmer field school (FFS).



## 1.2 THE NEED FOR RELIABLE DATA

The general lack of good quality data on OSH issues in cocoa farming makes it difficult to plan health and safety interventions and estimate the socioeconomic impact of work-related injuries and illness. An urgent need therefore exists to document the incidence of occupational injuries and the prevalence and incidence of work-related pain, illness, and injury within cocoa growing households. This report seeks to provide such baseline information for project implementation and purposes of monitoring and evaluation. The cocoa farmers in this baseline survey will also be used as the control group for an impact assessment of OSH training conducted by the STCP in 2009/2010 among 1700 cocoa farmers in Ghana. This impact study is under preparation while this baseline report was being written and will provide valuable information on the impact of the OSH training, the resulting adoption rates of safe practices, and on the groups of cocoa farmers that can best be targeted.

## 1.3 COCOA FARMING AND OSH POLICY

In comparison, farming cocoa is no more dangerous than farming other crops. Some particular practices in cocoa farming are dangerous, but oil palm farms are regarded as more hazardous because of the nature of the crop. Vegetable farming involves a more intensive use of pesticides than cocoa farming. In fact, the extensive farming practices of most cocoa smallholders in Ghana mean that their cocoa farms require little attention in comparison with many other crops.

Ghana's main cocoa regions – Ashanti, Brong-Ahafo, Central, Eastern, Volta, and Western – fall into two broad ecological zones, the moist and the dry forests (Asare 2005). On the whole, cocoa production is low and could potentially be improved by the use of better planting materials, good agricultural practices, and proper inputs. Many cocoa farmers are faced with challenges, such as access to credit and inputs, availability of labor, the effects of pests and diseases, and the fact that, on average, both the farmer and his/her cocoa farm are aging. Many farmers depend on the intercropping of a number of other arable crops with cocoa to feed their families, and use the income from cocoa to cover the expenses of education, health, and consumer goods. Although cocoa farming has been identified as being responsible for vast deforestation in these regions (Gockowski et al. 2012), the importance of timber and non-timber forest products in the farmers' livelihoods should not be underestimated.

### OSH POLICY

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At the policy level not much has been done to improve OSH in cocoa farming. Official rules and regulations apply only to large-scale private plantations, which are rare in Ghanaian cocoa farming. "The man on the farm is on his own", states one of the experts. Article 24 of the 1992 Ghana Constitution states that every person has the right to work in a safe environment. These constitutional laws have been operationalised under sections 118–121 of the 2003 Labour Act (651). OSH legislation is otherwise splintered and focused on specific economic sectors. For example, the 1970 Factory, Shops and Offices Act has a limited scope as it has been extended to only a few areas beyond those included in its name. Separate regulations exist for the traffic and mining sectors. New policies have been put in place over the last 10 years, but these focus primarily on compliance and prosecution.

Until the implementation of the Labour Act in 2003, there was no single legislation covering all aspects of economic activity in Ghana. The sections in the Labour Act that refer to OSH simply state that there should be a healthy and safe environment for workers. Though the scope is sufficiently broad, implementation is a challenge. The Labour Department is required to enforce the legislation; however, it lacks the resources and the capacity to do so. The Department of Factories Inspectorate should also play a role here. Many employers know little about OSH, and there is a lack of information and support for both employers and the self-

employed. The informal economy, in which the greater population and particularly women operate, is virtually neglected.

More specifically for cocoa farmers, the law does not cover the self-employed and their family members working on the same farm. The Occupational and Environmental Health Department of the Ghana Health Service (GHS) reports that some work has been done together with the cocoa industry, by establishing pesticide safety training in collaboration with the Poison Control Centre. Research on health in agriculture in Ghana focuses mainly on irrigation and vector-borne diseases, although (according to the head of the Occupational and Environmental Health Department of the GHS), the International Labour Organization (ILO) produced a four-part publication on child labor in cocoa farming in 2007, and there has been a national study on pesticides and impotence in vegetable farming (which did not produce convincing evidence, however).

New developments surrounding cocoa certification have also put the spotlight on OSH issues. More cocoa farmers receive training on the topic, though not equally under each cocoa certification code. One OSH expert deduces that consumers care more about residues found in the chocolate than about the poisoning of farmers.

#### 1.4 SCOPE OF THE REPORT

This report describes the mixed method data gathered during a survey of 420 cocoa farmers and farm workers. It provides the reader with the information essential to understanding the occupational safety and health hazards that are the greatest issues in the professional and private lives of cocoa farmers in Ghana, the incidences of OSH issues, how this should be put in perspective, and the recommendations that can be made. Throughout the report, the statistical data are placed in context by the inclusion of observations from discussions with cocoa farmers or from an OSH expert, a doctor or traditional healer. Supporting information is drawn from other surveys with a more general scope and larger samples.

Chapter 2 discusses the chosen methodology, Chapter 3 introduces the OSH hazards in cocoa farming and Chapter 4 presents the full survey findings in detail. Major findings are put in context in Chapter 5, which also indicates opportunities for future action and policy implications. This report has merely sought to give an overview of baseline data while many more possibilities exist for further analysis and research. More in-depth multi-variable analysis will be pursued in future publications. One of those future publications will be an impact study on the OSH training that was given to cocoa farmers, based on the manual the IITA/STCP developed and piloted in Ghana.

## 2 SURVEY DESIGN

### 2.1 PREPARATORY RESEARCH

A considerable body of literature exists on OSH issues in general and in agriculture specifically, but virtually all of it is focused on western agricultural contexts.

*Official data on the incidence of occupational accidents and diseases in agriculture are imprecise and notoriously underestimated, due to inadequate and heterogeneous recording and notifications systems. [...] In the case of the agricultural sector under-reporting is even more evident. In many countries the reporting and compensation systems may exclude the agricultural sector or certain categories of agricultural workers. Many countries group agriculture together with other sectors such as hunting, forestry, and fishing in their global estimates (ILO 2000, page 8).*

In the early stages of the study it became apparent that the study questionnaire could not be derived from existing formats. The preparatory research therefore focused both on reviewing the literature and collecting sets of qualitative, contextual data through individual and group discussions and expert interviews. Organizing the study in this way (1) informed the design of the questionnaire and planning of the work, (2) provided input for the enumerators' training, and (3) added context to the data obtained.

#### LITERATURE REVIEW

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Half of the world's labor force, an estimated 1.3 billion workers, is engaged in agricultural production. In terms of fatalities, injuries, and work-related ill health, agriculture is one of the three most hazardous sectors of activity (along with construction and mining). An estimated 2.34 million people worldwide died in 2008 from work-related accidents or diseases; 2 million of these deaths were caused by various types of disease and 321,000 by work-related accidents (ILO 2011). More than 900,000 deaths from exposure to hazardous substances at work are included in the figure of 2.34 million. In addition, research has shown that more than an estimated 317 million workers who did not die were injured in accidents at work that resulted in absences of 4 days or more (ILO 2000).

About half of the more than 300,000 fatal work-related accidents annually occurring worldwide involve agricultural workers. Mortality rates in agriculture have remained consistently high over the last decade, compared with other sectors in which fatal accident rates have generally decreased. The intensive use of machinery and pesticides and other agrochemicals has raised the risks. Available data from developing countries show an increase in the accident rate in agriculture. Such accidents occur mainly among migrants and casual workers, as well as women and children who are participating in waged labor in constantly increasing numbers. Exposure to pesticides and other agrochemicals constitutes a major occupational risk which may result in poisoning and death and, in certain cases, in work-related cancer and reproductive impairments. Millions more agricultural workers are seriously injured in the workplace. Furthermore, the widespread under-reporting of deaths, injuries, and occupational diseases in the agricultural sector means that the real picture of the OSH issues for farm workers is likely to be worse than that indicated in official statistics (ILO 2000; 2009).

Cocoa farming, like any agricultural work, is carried out essentially in a rural environment where the working and living environments are interwoven. Cocoa farming work is, therefore, subject to the health risks inherent in the rural environment as well as to those associated with the specific task being performed (Forastieri 2001). Previous IITA/STCP work did provide some general information on OSH issues, showing for example that weeding is one of the most dangerous activities. It also demonstrated that most of the OSH hazards experienced by cocoa farmers are caused by the farmers' lack of knowledge and information about the

hazards to which they may be exposed, their carelessness in the handling of farm tools and agrochemicals, poverty, and poor or limited health care (Tetty et al. 2010).

The available literature shows that research is rare on OSH in cocoa farming in particular and in agriculture in Africa in general, and has mainly been focused on determining exposure to pesticides and the effects on human health. Child labor in cocoa farming has also received much attention. Both topics are further discussed in two separate sections below.

The sparse remaining literature on agricultural OSH risks in countries with poor rural farmer populations covers few other issues. Two insightful studies in China (Xiang 2000) and South Korea (Lee and Lim 2008) draw attention to a number of considerations. (1) Farmers may not be considered a priority for health care facilities as they are perceived to work in a "clean and unpolluted environment:", (2) Farmers' health generally suffers from stress and accumulated external factors whose impact cannot be linked to one single symptom. (3) Respiratory and skin problems can be related to a multitude of factors. (4) (Male) farmers can show relatively high rates of hypertension, gastritis, diabetes, and liver diseases as a result of higher rates of risk behaviors, such as alcohol and tobacco consumption. (5) Rates of suicide may be higher among farmers. (6) Tension in relationships with neighbors and family and life stress are significantly associated with work-related injuries. These six issues were brought up in the discussions with OSH experts and doctors and within the four focus group discussions (FGD). Some were addressed in the survey to find out whether and how they applied to the Ghanaian context.

## PESTICIDE USE

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Pesticide users are the largest occupational group at risk for pesticide poisoning, with an estimated 25 million poisoned farmers in developing countries each year (Kuye et al. 2008). However, misdiagnosis and underdiagnosis mean that the exact magnitude of the problem is unknown. Unintentional poisonings kill an estimated 355,000 people globally each year; two-thirds of these deaths occur in developing countries (WHO 2003). According to Rother et al. (2008), "...high-input agriculture with increased use of pesticides is being promoted [...] by economic, trade and agricultural policies at national and international levels without adequate support for emerging farmers to manage pesticides safely, thereby placing farmers, their families, their workers, and their communities at increased risk...", and they point to the existence of the research gap.

Improper pesticide use is not a localized problem. Cocoa farming, in particular, has attracted attention for a long time because of the problem of pesticide residues. It is a strong example of what some refer to as "the circle of poison", whereby pesticides exported from Europe or North America "poison" farmers and their produce in developing countries and eventually end up in the food of Europeans and North Americans (Hay 1991). A study in South Korea (Lee and Lim 2008) highlights another issue – the fact that most of the pesticide-related deaths there were suicides resulting from ingestion. This problem may not be socio-culturally comparable to the situation in West and Central Africa; once again, there are few data.

## CHILD LABOR AND OSH

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Consumers' concerns about child labor have grown in the last decade, resulting in the chocolate industry developing corporate policies of social responsibility with a particular focus on child labor in cocoa farming. A number of studies have been conducted, including the 2001 collaborative survey by the Kwame Nkrumah University of Science and Technology (KNUST), IITA, and ILO. Based on that study, the STCP published a first report on the topic calling for focused enlightenment campaigns (Abe nyega and Gockowski 2003). Based on this work, Mull and Kirkhorn (2005) conducted research among a non-randomized sample in 10 communities, of 61 individuals 48 of whom were in the 9-17 years of age bracket. They concluded, "Children working in cocoa harvesting are exposed to physical and chemical hazards without proper training or personal protective



equipment. Unless safety interventions occur, there are potential long-term adverse health consequences". At the same time a general recommendation was made for the development of OSH instruction manuals.

It is important to point out that a study on OSH does not necessarily or automatically covers issues surrounding child labor. The important linkage here is children on the farm are indeed exposed to the same hazards as their parents, but the status of their underdeveloped bodies makes them more vulnerable. With children, the problem is mainly a lack of knowledge on the part of parents; for example, when they allow children to be present during spraying. The assumption, therefore, is that addressing the knowledge gap about OSH hazards among adult farmers will result in the OSH risk to children being drastically diminished.

## 2.2 ATTRIBUTION OF OSH PROBLEMS TO COCOA FARMING

The OSH hazards that are associated with cocoa farming have been identified in previous IITA/STCP publications. Chapter 3 provides a summary of the most important OSH hazards in cocoa farming. However, the outcomes of those OSH hazards cannot easily be attributed only to cocoa farming. Farmers all over West and Central Africa intercrop their cocoa with other crops, generally food crops such as cassava and maize. This presented an important challenge in the research design.

It has to be noted that cocoa is an immensely popular cash crop. In large parts of the humid forest in Ghana a majority of farmers derive almost all of their income from cocoa and many don't grow food separately. Cocoa income is partly used to buy food. We see this especially in relatively new cocoa areas such as the Western Region. An IITA/STCP randomized household survey held in 2010 in the Western Region showed that almost 100% of the households surveyed grew cocoa; the majority was producing cocoa alone. From the household survey it was estimated that 83% of all cultivated land was planted to cocoa. Most households were able to meet their caloric needs by including food crops in their cocoa production enterprise, particularly where the cocoa had been newly planted or in some cases replanted (Gockowski et al., 2012).

This study endeavored to maintain the clearest possible distinction between cocoa and non-cocoa farm work and OSH hazards by the careful design of the questionnaire and thorough training of highly educated enumerators. The cocoa farmers were clearly instructed – over and over again – that the question posed pertained only to work on their cocoa farms (or to the cocoa farms where they perform work). From the test interviews – and also during the FGD and expert interviews – it became clear that cocoa farmers themselves distinguish quite clearly between their cocoa farm work and work they may perform on other crops or their other farm(s). It should also be noted that for the majority of cocoa farmers, the limited amount of planting and tending of food crops that does go on in existing cocoa farms (also to shade patches of new/replanted cocoa plantings) is very much part-and-parcel of the proper management of a cocoa farm.

## 2.3 SAMPLING STRATEGY

The STCP's CSSP-II program requested that this baseline study should focus on three major cocoa producing regions of Ghana: Ashanti, Brong-Ahafo, and Western Region. The author added Central Region, another important cocoa producing region, using additional IITA funds. This also allowed an impact study of the STCP's OSH training curriculum in that region. No up-to-date comprehensive lists of cocoa communities were available<sup>1</sup>. The STCP, however, had previously purposefully selected 13 districts with high concentrations of cocoa farmers in these four regions, based on extensive ground truthing. On those 13 districts, the STCP had

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<sup>1</sup> The Ghana Cocoa Board (COCOBOD) may possess lists of cocoa communities in more districts; time restrictions and the STCP team's recommendations on the accessibility of such lists led to this course of action being abandoned.

prepared comprehensive lists of all the communities to prepare its interventions. Those lists were used for this study, which therefore opted for multistage random sampling.

## SAMPLING

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The lists of 13 districts consisted of 1162 rural cocoa communities. Of those communities, 270 had to be disqualified for having received STCP training; generally farmer field schools (FFS). The STCP's FFS on cocoa farming are mainly focused on good agricultural practices (GAP), though some OSH risks are part of the curriculum. In addition, some of these communities had also been used to test the new OSH curriculum. With that in mind, an additional 11 communities were disqualified for being at too large a risk of having been under the influence of either another community or a STCP farmer facilitator living in their midst. The sample size was restricted to 420 due to budgetary limitations but deemed to be more than sufficient for the purposes of this baseline study and to allow reliable policy recommendations to be made<sup>2</sup>. A random sample of 28 communities, seven per region, was selected from the remaining list of 881 eligible communities. Fifteen cocoa farmers from each of the 28 communities were interviewed, resulting in a total sample size of 420.

Available countrywide surveys already provide reliable statistics on more general background variables and health issues that can be generalized to the whole of Ghana. Many are not addressed in this study. For instance, the 2008 Ghana Demographic Health Survey (DHS) interviewed 11,788 households; of these, 6603 were rural households. Results from such larger surveys are used as a reference point throughout this report.

After the selection, STCP field agents were sent to each of the 28 communities to get permission for the study from the community chiefs and to gather exhaustive lists of all active cocoa farm workers in the community. Every worker actively working on a cocoa farm was registered, (18 years and older, man or woman, migrant or not, owner or laborer, on a large or small farm). From these lists, 15 respondents/community were randomly chosen and interviews were scheduled. In almost all cases, the community had made efforts to ensure that the selected farmers were available to be interviewed. If any of the randomly selected farmers were absent, they were replaced with the next registered farmer on the randomized list. Of the total number of randomly selected farmers, 36.4% had to be replaced in this way because budgetary limitations prevented the enumerators from making repeat visits to communities.

## ADULT RESPONDENTS

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This study addressed only active cocoa producers above the legal adult age of 18 and did not include children. Research on child labor focuses on the prevention or elimination of the use of an unsuitable labor force in a specific economic activity; OSH studies focus on the reduction of occupational safety hazards within a specific economic activity. Having said that, the systematic qualitative and quantitative analysis of the baseline and impact studies will be likely to lead to improvements to the OSH training manuals of STCP and inform the project's national partners, who can then improve their own interventions. The training of adults on OSH issues is likely to lead to important reductions in child labor. Some labor performed by children should be viewed as after-school family labor and/or on-the-job training of young farmers. This study does, however, take an interest in the existence of community rules and regulations on the use of vulnerable labor groups (the youth, pregnant women, and the elderly).

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<sup>2</sup> The estimation formula used to judge whether the sample size of 420 was adequate (whereby  $n$  = sample size,  $z$  = value of the standard variate at a given confidence level,  $p$  = the sample proportion in the target population estimated to have particular characteristic,  $q=1-p$  and  $d$ =the desired accuracy), is as follows:  $n = \frac{z^2 \times p \times q}{d^2}$  (Kothari 2004).

## 2.4 SURVEY INSTRUMENTS

For this survey a mix of quantitative and qualitative methods was used to allow for the best possible research design and for enough insight to be built up so that the results are put in the appropriate context.

### FOCUS GROUP DISCUSSIONS (FGD)

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Four FGD were held, two in the Ashanti region and two in the Western Region. In each region a group of women and a group of men were given the opportunity to express themselves freely about a number of key OSH topics. In the Ashanti region the group size unfortunately grew from the programmed 10 to around 25 and even more towards the end. Under the guidance of a skilled moderator, using the instructions outlined in Annex A, the men or women discussed the issues among themselves in their local language. The author followed the discussion through simultaneous translation. During two FGD in the Ashanti region an OSH expert was also present to listen in on the discussion. After each FGD the team discussed the collected data. The information coming out of the FGD was used to inform the design of the survey questionnaire and to provide context to the survey. It also allowed the author to make comparisons between the farmers' and the experts' opinions.

### KEY INTERVIEWS

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Five key respondent interviews were conducted with doctors, OSH specialists, and a traditional healer in the Ashanti region. Though these interviews served the same purpose as the FGDs, they tended to go into more detail and be of a more technical nature. In addition, a number of other specialists were approached for assistance with specific questions or issues.

### SURVEY QUESTIONNAIRE

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The comprehensive questionnaire used for this baseline report was designed specifically for this study. It has also been used for an impact study on the OSH curriculum that the STCP designed and piloted among a group of 1704 cocoa farmers. Employing the same logic that was used in the development of the training manual, the questionnaire mainly focuses on the following OSH risks: agrochemical hazards; carrying and lifting loads; ergonomic problems; farm emergencies; farm environment risks; use and misuse of personal protective equipment (PPE), musculoskeletal diseases; the use of farming tools, sharp tools and ladders; unsuitable work for vulnerable groups of people; and (the lack of) training in general. The survey does not look at off-farm post-harvest activities, however. All the interviews were conducted in the local languages. On one single occasion, a local translator had to be used.

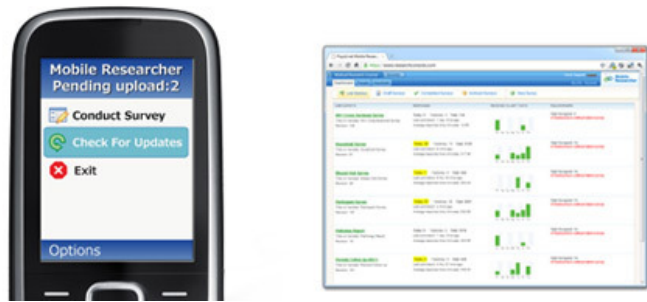
The index of the questionnaire followed a logical structure spread over eight chapters: (1) respondent, (2) health, (3) pain, (4) illness, (5) injury, (6) losses, (7) agrochemicals, and (8) PPE. A full copy can be found in Annex B. A mobile data collection tool<sup>3</sup> on simple cell phones was used instead of a paper questionnaire.

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<sup>3</sup> A third-party application that turns relatively low-cost internet-enabled mobile phones into powerful mobile data collection tools. It uses a computer-like interface (based on Java) to pose any kind of question. The enumerator can enter a word or a number, or select a multiple choice answer. More advanced answering options include longer SMS-like text answers, or the addition of pictures or GPS-coordinates. It can operate without network coverage. This tool allowed instant access to data and significantly saved on costs. Field movements and submissions were monitored the same day, which greatly enhanced the communication and collaboration between the coordinating researcher and the enumerators.

The application behaves in a dynamic way, automatically addressing only the questions that applied to the respondent's situation. A clear distinction was made between questions about knowledge of OSH issues and those about the cocoa farmer's actual practice. In most cases, respondents were asked to freely report on OSH issues (an open question was read out), after which the enumerator would select the options that had been mentioned, which were often several and added any new information under the "other"-category. For a limited number of specific questions, respondents were asked to select options (the question was read out together with the answers). Answers that would not fit the predefined categories were recorded under the "other"-category. Information reported under the "other"-category was re-coded daily or –if it represented a new answer category – was subsequently introduced through daily live updates to the questionnaire. This strategy improved its efficiency. The survey questions were never changed – only open answer categories were added. This technique allowed the use of skip-logic and many open questions in the questionnaire. The dynamic approach also kept the questionnaire's complexity down to a minimum for the enumerators in the field, who did not have to flip back and forth through a complex paper questionnaire.

Photo 2 - Using a cell phone and online solution to collect data.  
(© mobenzi.com)



## 2.5 SURVEY IMPLEMENTATION

For the implementation of the survey, a team of five enumerators was put together, composed of graduates from the Kwame Nkrumah University of Science and Technology (KNUST) with the required language skills. Three of these enumerators had previous experience in conducting scientific surveys in the cocoa communities under the STCP. During the 2-day in-house training, the enumerators received essential instruction on OSH issues in cocoa farms from an OSH consultant and were familiarized with the methodology for mobile phone data collection.

Photo 3 - Enumerator training on OSH hazards in cocoa farming and on mobile data collection.



Through a lengthy discussion process involving the enumerators, the IITA researcher, the OSH expert, and a translator who was fluent in all the main local languages, each question was examined, translated into several local languages, and "back-translated". This ensured that questions would be correctly interpreted by both the enumerator and the respondent, and made sure that the answers provided the data required. After this process the questionnaire was launched as a mobile data collection tool and field tested with the five enumerators among 30 farmers in the Ashanti region, during 2 days of field training and field testing. The resulting data have not been included in the analysis.

## ORGANIZATION OF THE WORK

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The baseline survey first ran in three regions between 14 June and 20 August 2011. From 25 October to 2 November 2011 another seven communities were added from the Central Region. A team of four enumerators and an STCP driver were sent to communities which were already expecting them.

After introductions and a description of the work taking place that day, the lead enumerator would plan the day with the chief and elders to make sure that the selected and replacement cocoa farmers would be available and on time. Each enumerator would perform between three and five 45-minute interviews each day, to attain a group day target of 15. At the start of each interview the objective was clearly explained to the respondent and consent was acquired. As it turned out, none of the respondents refused to participate

Photo 4 - Cocoa farmer being interviewed by an enumerator using the mobile data collection tool.





### 3 OSH HAZARDS IN COCOA PRODUCTION

This short chapter seeks to give a brief overview of the OSH hazards that cocoa farmers are likely to encounter during their work and the possible outcome. As this topic has been dealt with in previous IITA/STCP publications, this chapter leans heavily on the STCP farmer training guide *Preventing and reducing Injuries and ill health in cocoa production* by Samuel Tetey, Moses Ogoe, and Soniia David (Tetey et al. 2010).

Cocoa farming on smallholders' farms is based on both household and hired labor. This means virtually anyone in cocoa communities is potentially exposed to OSH hazards; men, women, children, the elderly, indigenous populations, immigrants, etc. Most of the safety and health hazards experienced by cocoa farmers are due to (1) farmers' lack of knowledge and information about the hazards to which they and their surroundings may be exposed and how to handle them, (2) carelessness in the handling of farm tools and agrochemicals, (3) poverty and (4) poor or limited health care.

#### 3.1 FARM TOOLS

Cocoa farmers use a variety of sharp farm tools that can lead to small and serious injuries. The main hazards of sharp tools are improper and careless use, use by the untrained and unsupervised youth and children, and by farmers injuring farmers working close to them. Not being able to recognize a hazardous situation is a hazard in itself and the use of sharp tools by a worker who is drunk or under the influence (including of medication or drugs) can be quite dangerous. Chainsaw operation by inexperienced, untrained operators is a hazard, but does not seem to be frequent in cocoa farming.

The outcome of these hazards are cut or prick injuries to the farmer or people he/she works with, which can in turn lead to a heavy loss of blood or infected wounds if not promptly and properly treated. Amputations are a definite possibility, especially during chainsaw operation.

Ladders have their own hazards, especially when these are weak, damaged, or placed incorrectly, or when farmers overreach while on the ladder. Falls from ladders may result in broken bones and other injuries.

#### 3.2 CARRYING AND LIFTING LOADS

All kinds of loads (seedlings, cocoa beans/pods, foodstuff, water, tools, etc.) need to be carried around to and from cocoa farms. Many cocoa farmers are aging and may not be strong enough to lift and carry loads for extended times, especially for long distances. The hazards are mainly lifting (too) heavy loads while using a bad lifting technique, or being thrown a load. Farmers take on loads that are quite difficult to handle or make it difficult to see where they are going. The hazards are even larger in wet, muddy, and dark conditions or when obstructive clothing is worn such as long skirts of the women.

The outcome of these hazards may be pain and/or injury to the neck, shoulders, back, lower back, and waist; of course, injuries from falls may even include broken bones.

Photo 5 - A cocoa farmer back from the farm with a heavy load of wet cocoa on her head.





### 3.3 REPETITIVE STRAIN INJURIES

Repetitive strain injuries are injuries to muscles when they are overused or used for a long time in doing an activity, especially if a lot of force is applied. Injuries of this type mainly affect the arms, fingers, and shoulders. Cocoa farmers may suffer from repetitive strain injury when they use blunt machetes or axes to cut down trees, to weed, or remove mistletoe. This type of injury can also occur during pod breaking. The lack of knowledge about this kind of injury and difficulties in linking cause and effect are likely to lead to cocoa farmers not taking adequate rest and continuing with the same activities for longer periods even when discomfort is experienced. The outcome may be pain and inability to use the affected muscle(s) and longer.

### 3.4 POOR POSTURE

Poor postures are those positions that can cause injury when held over long periods. This occurs regularly in cocoa farms when farmers are weeding or harvesting cocoa, especially from badly managed trees. Some cocoa farmers, such as the youth, women, and/or the elderly, use tools that are not adapted to their size and strength. Also twisting heavy loads from one side to the other may be detrimental to the cocoa farmer's health.

Outcomes may be pain in waist, knees, back of the neck, back, and other parts of the body.

### 3.5 AGROCHEMICALS

The agrochemicals used in cocoa production include fungicides, insecticides, herbicides, and fertilizers. Both farmers and the people who eat the chocolate produced from cocoa may be exposed to agrochemical hazards. All agrochemicals can negatively affect the human body and the environment if they are not properly handled, applied, stored, and disposed of. Generally, the most risky activity for fungicide and insecticide use is mixing and loading because the chemical is in a concentrated form. However, without good spraying equipment and the appropriate PPE, application can also be very risky, especially also for (unprotected) bystanders.

Some agrochemicals are more poisonous than others, but direct and chronic effects can be severe and include headaches, dizziness, respiratory difficulties, skin irritation or burns, deformity in children from the exposure of the father or mother, sterility, and cancer. The chronic effects of agrochemical exposure are particularly difficult to relate.

### 3.6 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Cocoa farmers should use different types of PPE including boots, gloves, goggles, respirators, and hats, for different tasks. This means PPE of the right size needs to carefully be selected, properly used, and maintained for specific tasks. Without wearing PPE, farmers are more easily exposed to agrochemical hazards, but also to cut injuries or farm hazards, such as bites, stings, and prick wounds.

### 3.7 VULNERABLE PEOPLE

Certain categories of people that work on cocoa farms are more vulnerable than others. They are, however, faced by the same and often additional hazards. Pregnant women in the African cocoa belt continue to work long hours and have heavy workloads. The physiological changes that occur in their bodies make it more difficult and uncomfortable to deal with the strain of cocoa farm work. Changes in posture, weight, and hormone levels cause additional hazards in the form of tiredness, added discomfort, dehydration, disequilibrium, and exposure of the unborn child to agrochemicals. Outcomes include more injury and pain, miscarriage or premature birth, reduced birth weight, and/or deformity in the child.

Children can spend much time on cocoa farms, helping with (light) farm or after school or, in some cases, carrying out cocoa production activities on a regular basis. Some tasks, such as handling and applying pesticides, carrying heavy loads, and using sharp tools, are more hazardous for the undeveloped body and mind. Heavy lifting and straining can permanently injure growing spines or arms and legs; children have less experience and knowledge of hazards and associated risks and how to prevent them and are affected by much lower levels of agrochemicals than adults. Agricultural tools are designed for adults and may not be suitable for children and the same can be said about PPE which will therefore not offer adequate protection. In addition youngsters, especially girls, working alone on a farm may be exposed to additional risks such as sexual abuse.

In West Africa, a high proportion of cocoa farmers are elderly people. Their bodily capacities are slowly decreasing: strength, speed, vision, hearing, flexibility, balance, etc. Elderly cocoa farmers are more likely to suffer from health problems, such as heart trouble, diabetes, and high blood pressure, and may be on medication. Hazards are early fatigue and slower reflexes causing more injury. Heavy strain may worsen existing health issues. Decrease in bone density in the elderly may more easily result in broken bones, especially since they fall more easily.

Photo 6 - A child in a cocoa community learns from a very young age how to handle a cutlass.



### 3.8 FARM ENVIRONMENT

Cocoa farms are not the most hospitable working environment that one can imagine. Weather conditions, animals, insects, smoke, dust, trees, thorns, tree stumps, etc., are the hazards to which cocoa farmers are exposed every time they go to their farms.

### 3.9 FARM EMERGENCIES

How people respond in an emergency situation is important and could determine the extent of the injury or even whether the injured person lives or dies. Emergency situations are made worse when people do not recognize that they are dealing with an emergency and need to seek immediate medical attention. A clear example is sleepiness because of a massive dose of agrochemicals. Delay in seeking medical attention may complicate a situation or even cause the death of the injured person.

## 4 PRESENTATION OF SURVEY RESULTS

This chapter reports on the findings of the baseline survey and generally focuses on quantitative data. Whenever data from qualitative work, the FGD, or the key respondent interviews, are used, this is clearly mentioned. The focus is to report on the likelihood for cocoa farmers and farm workers to encounter certain OSH hazards. At the same time, knowledge about OSH hazards is described. A discussion, using insights from qualitative data, of what these results mean for the sector and what can be done, follows in section 5.

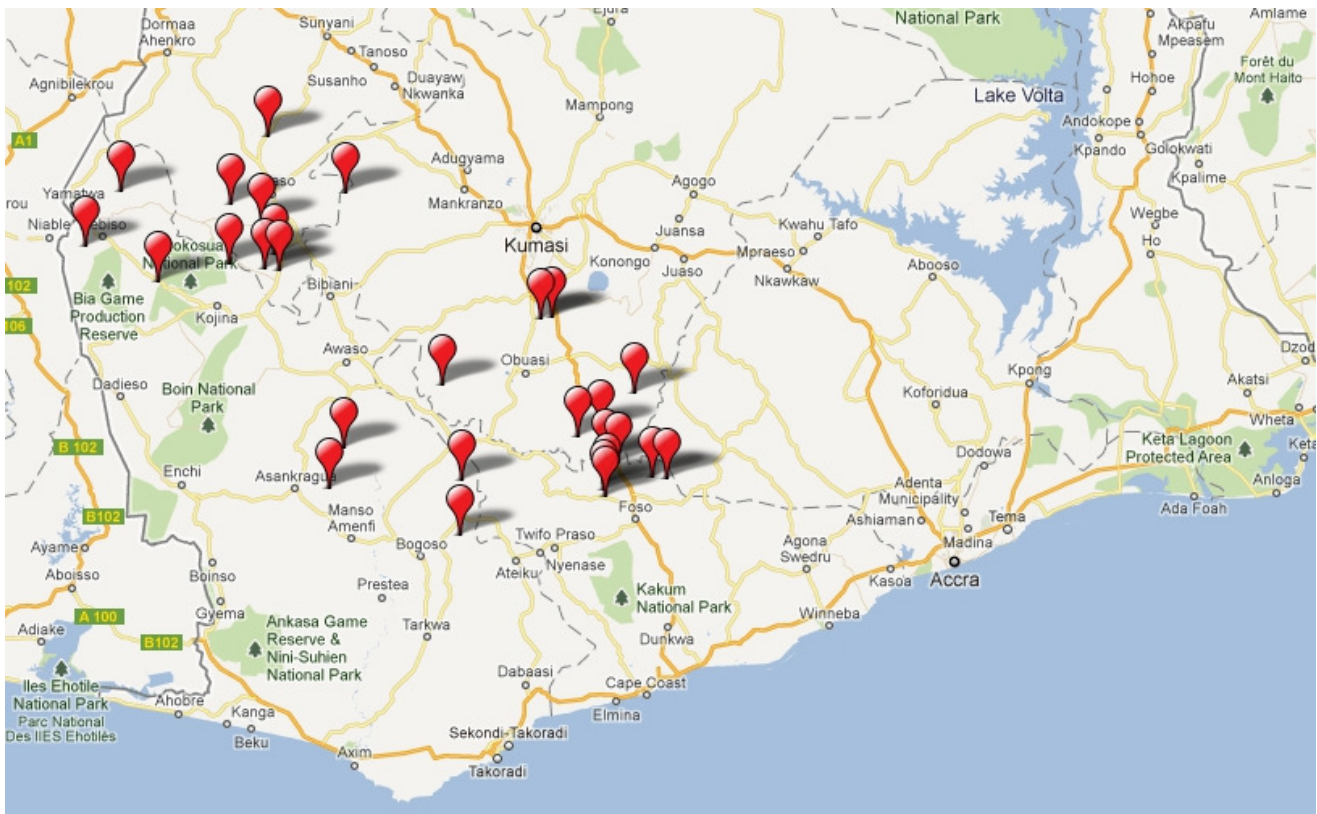
### 4.1 SURVEY DESCRIPTIVE STATISTICS

- Four FGD with male and female cocoa farmers in Ashanti and Western Region
- In-depth interviews with five doctors and OSH experts and one local herbal doctor
- 420 survey interviews
- Four survey regions: Ashanti, Brong-Ahafo, Central Region, and Western Region
- 28 communities; seven/region, spread over 13 districts
- 15 randomly chosen cocoa farmers/workers/community
- Median survey duration of 46 minutes

### 4.2 THE RESEARCH AREA

The four research regions were chosen from the six main geographical regions of Ghana in which cocoa is grown: Ashanti, Brong-Ahafo, Central, Eastern, Volta, and Western. Figure 1 shows the locations of all surveyed communities.

Figure 1 - Surveyed communities (n=28).



**RESPONDENT CHARACTERISTICS**

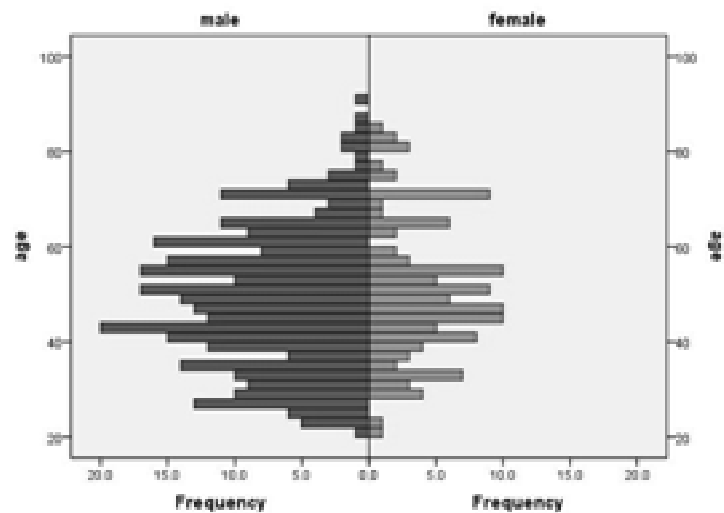
General demographic characteristics of the respondents were recorded as background information and to allow for later use in multi-variable analysis.

**AGE**

The 420 respondents show a median age of 48 years, ranging between 21 and 90. Of this group, 71.2% were male and 28.8% female.

From the age distribution it is clear that the respondents were not distributed according to the usual pyramid-shaped age distributions found all over Ghana. In fact, the Ghana Demographic Health Survey (GDHS 2008) shows that in Ghana more than half of the women (56%) and men (55%) are under the age of 30, but this baseline study finds a median of 48 years and roughly 10% of the respondents are under 30.

Figure 2 - Age distribution by gender.

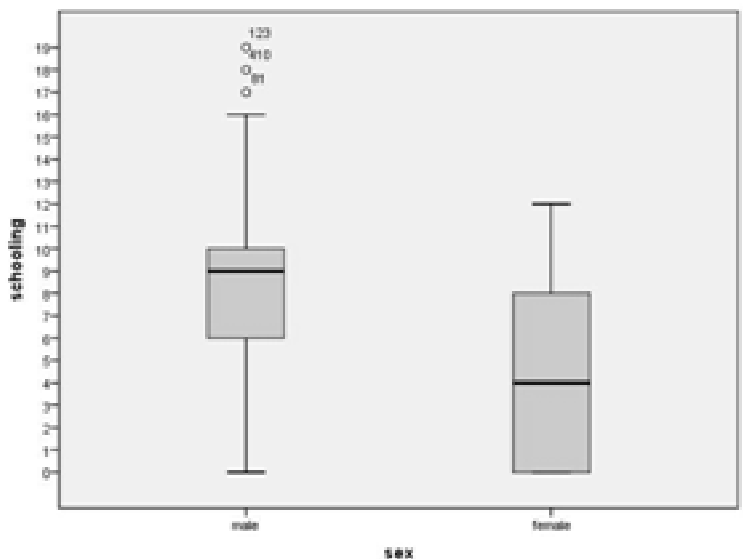


**EDUCATION**

The mean number of self-reported years of schooling among the respondents (including non-formal education such as alphabetization) was 8 years, although a notable difference exists between women (4) and men (9).

Although the gender difference in educational attainment found in this survey is consistent with other reports, the fact that we allowed for any kind of education<sup>4</sup> to be reported produced notably higher values. In comparison, a general baseline study on cocoa farmers in Ghana that was delivered by MIT and Harvard University (Hainmueller et al. 2011) found a mean of 2.5 years of completed formal schooling among female cocoa farmers and 3.6 years among males, whereas the 2008 DHS in the rural areas found a median of 5.1 completed years among women and 7.4 among men.

Figure 3 - Self-reported years of education.



<sup>4</sup> This arbitrary choice resulting in a subjective response was made on the basis that cocoa farmers can be lifted to higher levels of understanding and better access to information not only by formal education but also by professional training and alphabetization classes. On the downside, this figure is not easily compared with that in other reports.

## EXPOSURE TO THE MEDIA

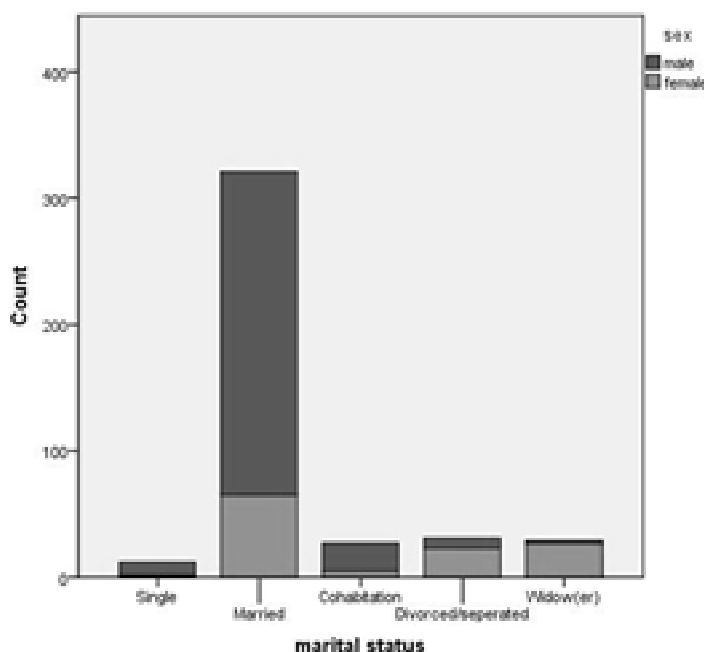
No less than 98.3% of the respondents reported listening to the radio almost every day. Only 11.2% watched television, and no more than 1.7% read a newspaper. Only 1% followed all three media; 9.3% followed up to two, and 89.8% followed only one of these media for information. The ever-increasing coverage provided by several mobile phone networks may also increase access to information, but this was not measured. However, the 2008 DHS reported that mobile phones were available in 37% of rural households.

## THE HOUSEHOLD

The mean household size<sup>5</sup> was found to be 6.5, with a median of 6 and a mode of 5. This is consistent with the findings of Fortson et al., 2011 and the 2011 MIT/Harvard survey of cocoa farmers. The 2008 DHS records a mean household size of 4 in the rural areas across the whole of Ghana.

As shown (Fig. 4), three-quarters of respondents were married. The rest were categorized either as divorced (7.4%), cohabiting (6.4%), widowed (6.9%), or single (2.9%). Almost all respondents were either household heads or spouses of the household head; around 86% of the households were headed by men. In most cases, the household was made up of 2 adults, although a mean value of 3.4 adults was recorded, as in 20% there were households with over 8 adults reported. The mean, median, and mode of the number of children/household were all 3.

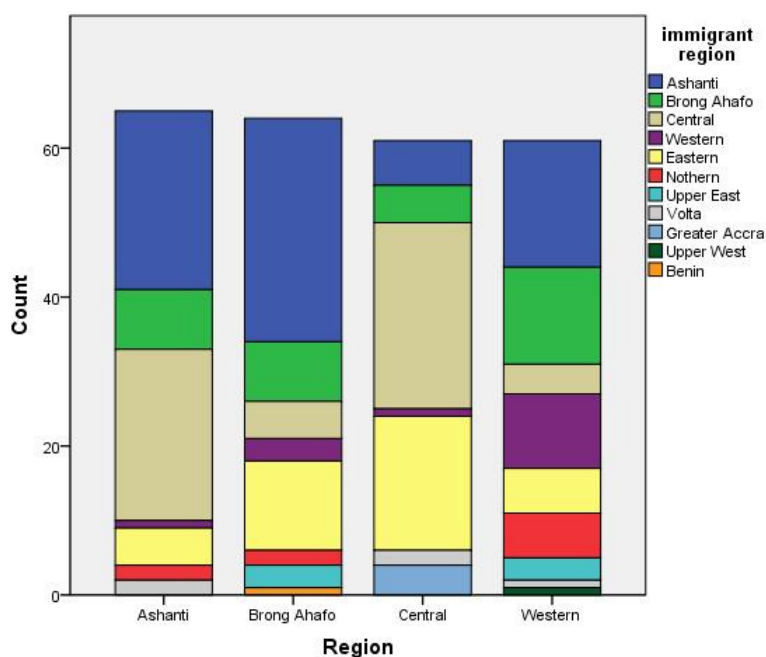
Figure 4 - Marital status count.



## MIGRATION

Almost 35% of respondents reported being born and having grown up in the communities in which they currently resided, and another 5.5% had only grown up in their communities. Almost 60% declared themselves to be immigrants. The percentage of immigrants was comparable among the four regions and significant mobility exists within each region itself (Fig. 5).

Figure 5 - Immigrant count per region, incl. provenance.



<sup>5</sup> A household was defined to the respondents as "all the men, women, and children they live with every day and share their food and income with".

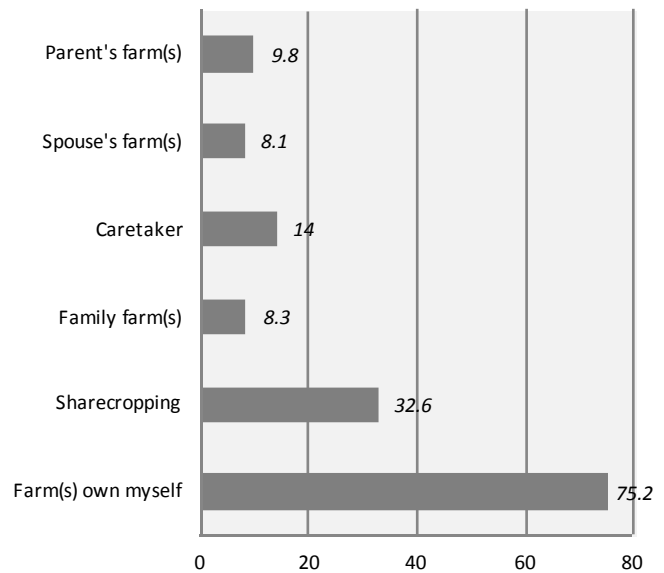
Immigrants moving into Ashanti communities mainly came from Ashanti itself and the Central Region. The largest group moving into both Brong-Ahafo and the Western Region came from the Ashanti region. Many also moved from Brong-Ahafo to the Western Region. The largest group of immigrants in the Central Region came from the Eastern Region.

### (COCOA) FARMING

About 75% of respondents reported they owned the farm or farms they cultivated, though they might cultivate several farms. Cocoa farmers do not accurately estimate the surface area of cocoa farms in general, and overestimation can be as high as 40–60% (Hainmueller et al. 2011). The same MIT/Harvard survey reports an average size of 5 acres (2 ha) and a median of 3 acres, which could be used as an indication.

For food security virtually all cocoa farmers farm other crops next to (or intercropped with) cocoa. The dominant other crops reported by respondents included cassava (92.4%), plantain (91.2%), cocoyam (72.6%), and maize (55.5%), followed by vegetables (42.1%), oil palm (33.6%), and yam (33.1%). Fewer respondents also reported rice (7.6%) and/or several species of fruit.

Figure 6 - Kind of farms worked on.

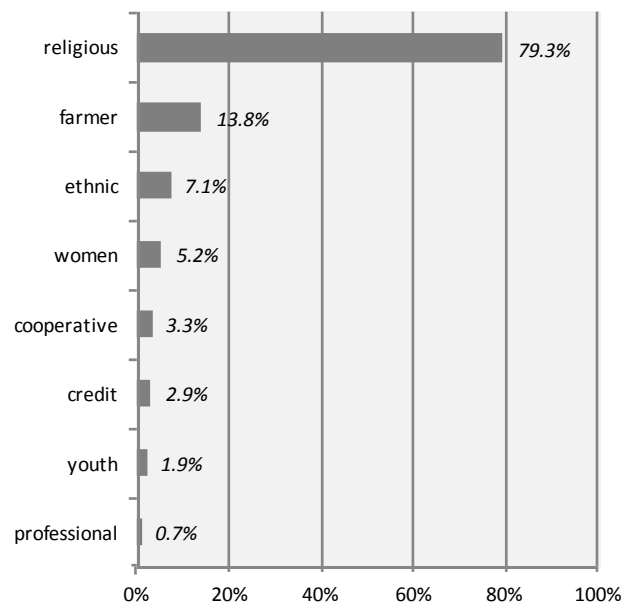


### GROUP MEMBERSHIP

Though “membership” as such scores high, with around 83% of respondents being members of some kind of organization (group, association ...), 61% percent of respondents were members of only one organization. About 20% were members of either two or three organizations.

Almost all reported memberships were of religious organizations (79.3%), followed at a distance by farmers’ organizations (13.8%), ethnic organizations (7.1%), and women’s organizations (5.2%). Cooperatives, credit unions, youth organizations and professional organizations all scored under 3.5%.

Figure 7 - Membership of an organization.





## 4.4 HEALTH

The specific topic of occupational health and safety cannot be discussed without a good understanding of the general health issues that farmers face. It is therefore important, also as background information for the reader, to provide a profile of the respondents' general health and how health (care) is perceived and approached.

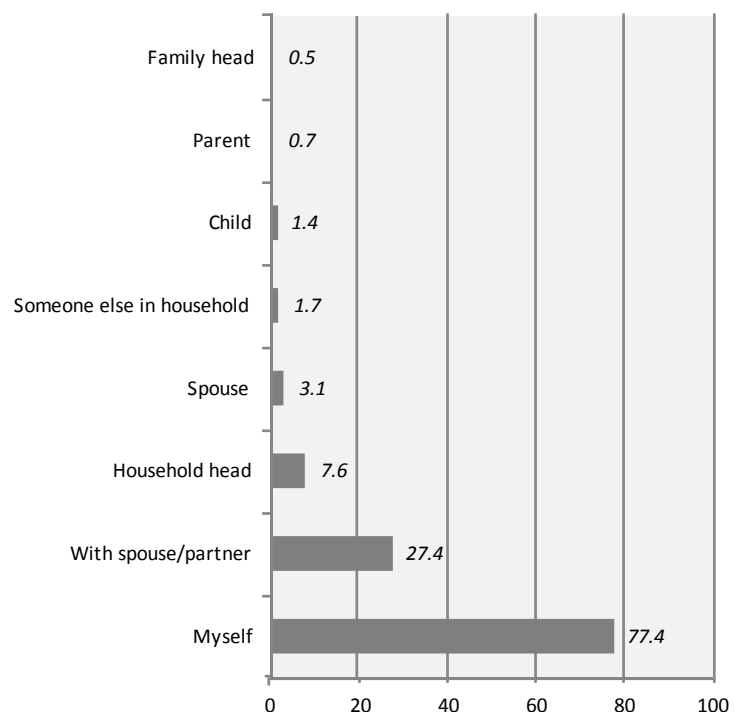
### GENERAL HEALTH SITUATION

The majority of cocoa farmers (73%) perceived their own health to be "good" or even "excellent". No more than 6% reported they were suffering from poor health. The doctors agreed that the most common general health problems are malaria, respiratory disease, and diarrhoeal diseases. Typhoid, cholera, schistosomiasis, trachoma, and dysentery are common in Ghana. Tuberculosis is also a significant health problem, but Ghana is considered to be a low prevalence county for HIV/AIDS (relative to other parts of Africa). The 2010 UNAIDS report on the global AIDS epidemic indicates that 1.8% of Ghanaian adults are HIV positive. Because of the potentially sensitive nature of the diseases and/or because the enumerators had no medical background whatsoever, none of the above diseases were part of the survey, except for malaria. In these baseline data, about 62% of the respondents reported having had a malaria attack over the last 2 years, with 10% reporting more than five attacks. In 21% of the surveyed households nobody slept under a bed net; everybody did in 30% of the households.

### DECISIONS ABOUT HEALTH CARE

Three-quarters of respondents (77.4%) reported that they made their own decisions about health care. This large percentage is a direct result of the fact that 71% of respondents were male and almost all of them were household heads. About a quarter (27.4%) reported that they took decisions together with their spouse or partner. Responses from female cocoa farmers were split according to their role as either household head or spouse of a male cocoa farmer. Women who were household heads generally made their own decisions while those who were spouses generally discussed health with their husbands.

Figure 8 - Who makes decisions about health care?



## OSH TRAINING

The purpose of OSH training is to allow trainees to learn how to identify, assess, and avoid work-associated hazards, or to learn techniques that can reduce risks. Out of 420 respondents only seven (1.6%) indicated that they had ever received any form of training<sup>6</sup> on safety and health in cocoa farming, much lower than the 7% reported in the MIT/Harvard study. Many more respondents had received training on farm maintenance. Participants in the FGD were quick to report that they farmed in exactly the same way as their ancestors had done before them.

## NHIS COVERAGE

About 74% of the respondents reported that someone in their household was covered by the National Health Insurance Scheme (NHIS). The mean rate of household member coverage was 51%. In 26% of the cases, none of the household members were covered and in 20%, all members were covered.

## SEEKING MEDICAL CARE

When asked where they generally received medical care, respondents most often mentioned the hospital (71%), the pharmacy/drug sellers (63%), home treatment/herbs (52%), and the small clinic (32%). Traditional healers and spiritualists were mentioned much less (1%). No traditional birth attendants or maternity homes were reported; this is unsurprising, considering the low number of young women in the sample (See Fig.2).

Respondents reported an average of 49 minutes travelling time to reach medical facilities. The first quartile fell at 25 minutes, the second at 37 minutes, and the third at 60 minutes.

## RISKY BEHAVIORS

Certain behaviors increase the OSH risks in cocoa farming. A number of these risky behaviors are discussed below.

Respondents used an average of 5.5 painkillers/week. Though 50% reported using 0-3 painkillers/week, about one-third reported more than 7/week, and the top 10% ranged between 15 and 42/week.

Figure 9 - Distribution % of NHIS coverage.

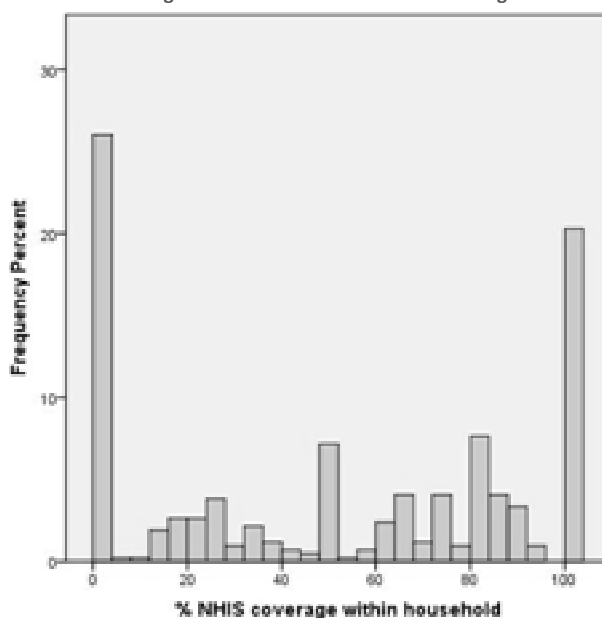
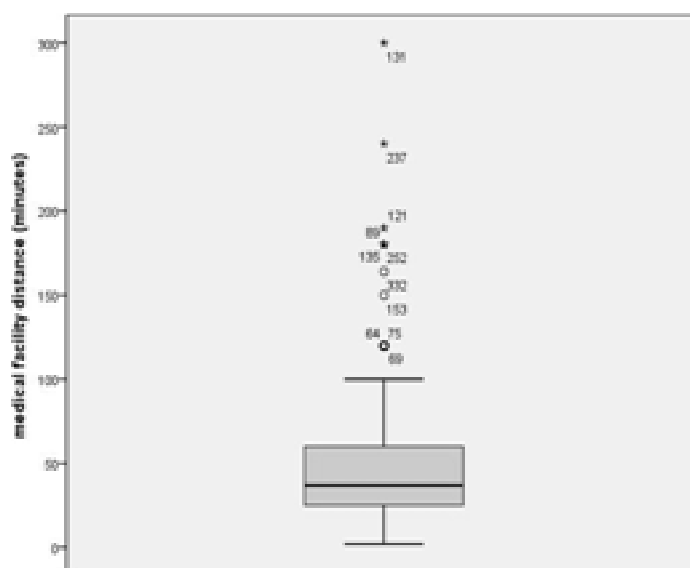


Figure 10 - Time spent to get to medical facility.



<sup>6</sup> Training provided by extension officers (3), Rainforest Alliance (2), Farmers' Organization Abrabopa (1), or unknown (2).

Although the main issue relating to tobacco use is the long-term risk to the farmers' general health, smoking is also potentially dangerous as a cause of bush fires, and in combination with the application of farm chemicals (ILO 1991). The 2008 DHS data reveal that about 10% of men in rural areas use some kind of tobacco, against less than 0.5% of women. In this baseline study no more than 4.3% of the respondents were smokers, and only one of these was female. Out of these respondents, 56% smoked on the farm. None smoked while applying farm chemicals.

The baseline survey found that about 38% of male respondents consumed alcohol. Less than 15% of them had more than five drinks/week (beer, (palm) wine, local gin...). Ten percent of the women consumed alcohol, but less than 5% had more than three drinks/week. None of the women respondents reported drinking alcohol while doing farm work; however, 7.9% of the male respondents who consumed alcohol on occasion reported sometimes having a drink while working on the cocoa farm. None reported drinking alcoholic beverages while applying pesticides.

### EATING AND DRINKING ON THE FARM

In general, cocoa farmers do recognize the health risks inherent in eating and drinking on the farm. Bush fires, lack of hygiene, and contaminated water are the main perceived risks. Several respondents reported experiencing nausea and abdominal discomfort from not eating at all or from resuming work directly after having eaten. A local doctor added that during certain times of the year there is not enough (variation in the) food; people work with empty stomachs, and children in particular can show vitamin deficiencies. A more specific OSH risk, eating on the farm during pesticide application, will be dealt with in Section 3.8.

### VULNERABLE GROUPS

#### PREGNANT WOMEN

Respondents were asked about their experiences at the time they or their wives were pregnant. After reducing the answers to four general categories, half of the women reported that they continued to work during their pregnancies. The men reported in much higher percentages that their spouses did only light work or did not work on cocoa farms at all. The FGD suggested that there are no common norms within the communities regarding what work pregnant women can or cannot do. It seems that many women decide on their own about what work they are willing to do during pregnancy, although men proclaim that it is the husband who decides.

The local modern doctors generally see women staying at home towards the end of the pregnancy, but report that there are cases of spontaneous abortion due to falls occurring on farms, or while travelling to/from the

Figure 11 - Work performed during own or wives' pregnancy.

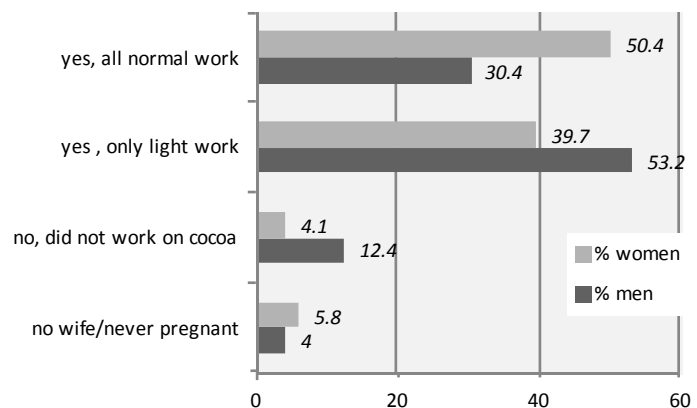
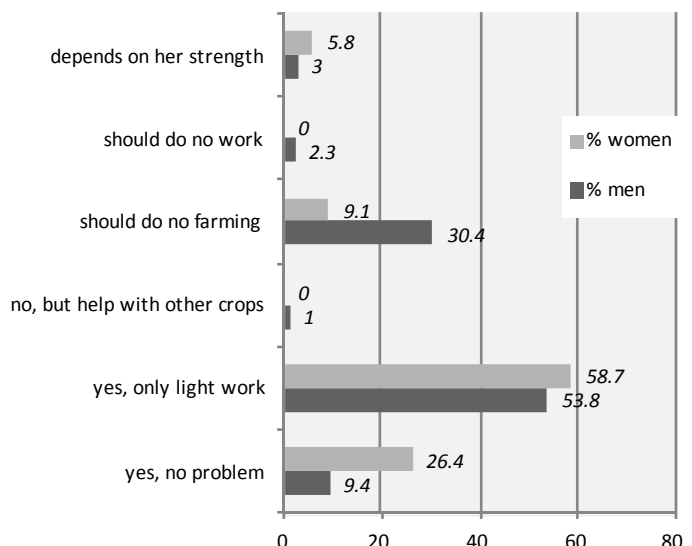


Figure 12 - Okay for a pregnant woman to continue work?



farms. Other major risks from cocoa farming during pregnancy include fatigue and malaria, and exposure to pesticides, but these are often not recognized as risks. From the cocoa farmers' opinions we see that while 30% of the men were of the opinion that pregnant women should not do any work in the second half of the pregnancy, only about 9% of the women cocoa farmers (mean age: 50) felt the same. Twenty-six percent of the women, compared with only 10% of the men, said working was "no problem".

## THE ELDERLY

Because carrying heavy loads poses the risk of slips and falls and places dangerous strain on elderly farmers (who may have reduced bone density), respondents were asked whether the elderly carry the same loads as younger adult farmers. About half reported that the elderly carry fewer, lighter loads. Around 30% reported that elderly farmers don't carry heavy loads at all. The answers of the remaining 20% were divided between "less heavy" and "fewer loads", with only 6.2% reporting that the elderly carry the same loads as younger farmers. Farmers over 60 were asked whether they actually did still carry loads, and it turned out that a higher percentage, almost 50%, didn't carry loads at all. Another 40% reported carrying fewer or lighter loads. Still, 7% of the farmers aged between 60 and 70 indeed indicated that they continued to carry heavy loads.

## CHILDREN

To get some idea of the perceptions about children and adolescents working on cocoa farms, respondents were asked at what age they would allow their household members to perform certain tasks (Fig. 13). When we look at the mode of the reported minimum ages, which is 18 for all activities, this shows that most farmers wait until adolescents reach the age of 18 (or know that they should) before allowing them to perform certain tasks. However, the mean ages and especially the lowest reported ages show that there are justified concerns about the on-farm safety of adolescents, and that some disturbing exceptions exist with regard to even younger children.

Figure 13 - Reported minimum age for a selection of farm tasks.

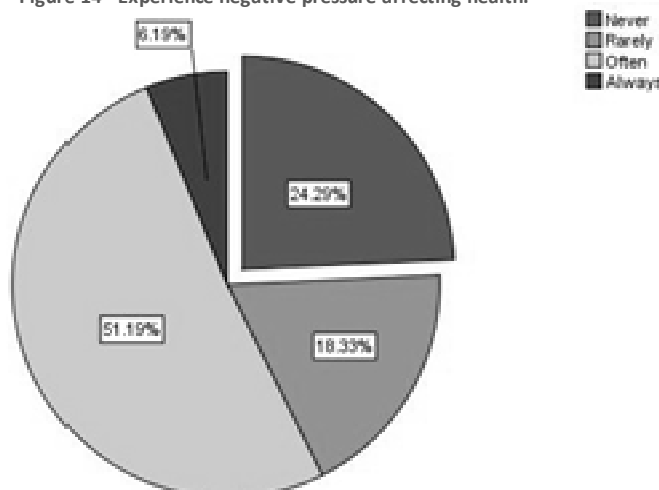
| Task                              | Mean age | Mode age | St. dev. | Lowest | Highest |
|-----------------------------------|----------|----------|----------|--------|---------|
| Use sharp tools                   | 14.7     | 18       | 3.271    | 5      | 20      |
| Mix or spray farm chemicals       | 17.9     | 18       | 2.343    | 8      | 29      |
| Carry heavy loads                 | 16.5     | 18       | 2.757    | 6      | 25      |
| Young man working alone on farm   | 18.1     | 18       | 2.558    | 8      | 30      |
| Young woman working alone on farm | 18.9     | 18       | 2.907    | 6      | 30      |

## PRESSURE/STRESS

The concept of psychological stress was not easy to define when speaking to the respondents, so for that reason the terms "pressure" or "much thinking" were used. About 51% of the respondents reported this had happened to them to such an extent that it had had a negative influence on their health.

Most of the respondents reported feeling this pressure (with a negative effect on their health) from worries about money (70%), family matters (56%), and/or cocoa farming (51%).

Figure 14 - Experience negative pressure affecting health.



Other relationships and other kinds of farming scored only between 2 and 5%.

Of the respondents who felt any kind of pressure from cocoa farming (51%), around 89% experienced this pressure seasonally. This high percentage is not surprising. The seasonal nature of cocoa farming requires the performance of a number of activities within a limited timeframe, to which challenges, such as a lack of resources (inputs, labor), can add much stress for the cocoa farmer (Forastieri 2001).

The most reported self-observed health effects due to psychological pressure from either farming or worries about money (76% of the respondents) were sleeplessness (46%), concentration problems (21%), no energy (15%), weight loss (6%), and headaches (4%).

In this survey 71.2% reported “not knowing any cocoa farmer who worried so much about farming or money problems that he/she ended his/her life”. Another 19.8% had heard that someone they didn’t personally know committed suicide, while 9.3% knew such a cocoa farmer personally, and 0.7% cared a great deal about a cocoa farmer who had committed suicide. It should be stressed that some respondents must have been reporting about the same cases of suicide.

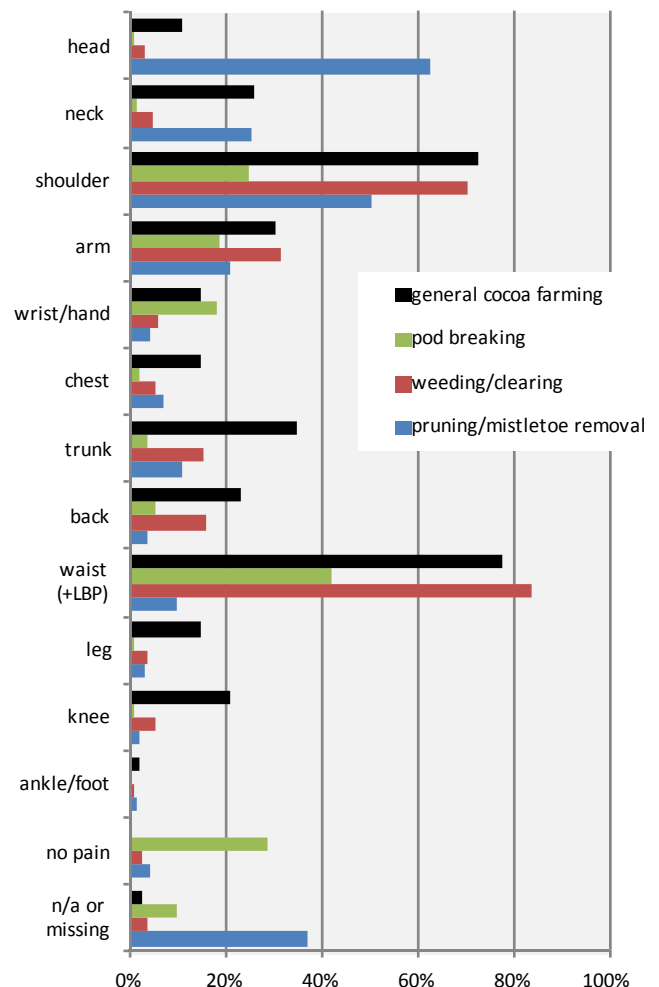
## 4.5 PAIN<sup>7</sup>

The work of a cocoa farmer is almost always physical, and often in an inhospitable environment. Due to the continuous physical strain on their bodies arising from the ergonomic challenges associated with farm work, practically all cocoa farmers experience musculoskeletal problems. The acute outcome, immediate pain, is easier to link to the cause than the chronic pains which become aggravated with time. Focus in this section, therefore, is predominantly on acute, easy to identify pain<sup>8</sup> associated with cocoa farming. Lower back pain (LBP) was expected to be a problem with many farmers, but the term turned out to be difficult to work with. As predicted by the translator and enumerators during the design and test phase, it would almost always be called “waist pain’.” The choice therefore was made to distinguish only between back and waist pain.

### PAIN FROM COCOA ACTIVITIES AND TOOLS

Figure 15 presents data on which pain was reported during which activity for the entire population of respondents (n=420). The black bars correspond to muscle, joint, or bone pain caused by cocoa farming in

Figure 15 - Proportions of farmers experiencing pain during selected cocoa activities.



<sup>7</sup> Pain is defined by the International Association for the Study of Pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage”.

<sup>8</sup> There seemed to be a general expectation among the local doctors that men might downplay their aches, while women might exaggerate, the basis for which remains unclear.

general. The colored bars correspond to the same question asked again, but for specific activities.

The three specific cocoa farm activities highlighted in Figure 15 were chosen on the basis of expert advice on which activities were most likely to cause different kinds of musculoskeletal problems. Respondents were also asked whether seven other activities caused pain or not. Harvesting cocoa pods led the list (69%), followed by planting cocoa (67%), spraying pesticides (51%), drying cocoa (46%), felling trees (34%), fermenting cocoa (19%), and broadcasting fertilizers (16%).

Almost 98% of respondents reported pain resulting from the use of hand tools. The cutlass (or machete) heads the list with almost 94% reporting pain, followed by the harvesting hook (or “go to hell”) with 65%. The hoe (14%), axe (11%), and knife (9%) cause pain less often. There were almost no problems reported with the (standard) pruner (1.2%), but that may also be related to its unavailability to many cocoa farmers.

### LIFTING AND CARRYING LOADS

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All respondents were asked to show the enumerators how they lifted heavy loads. To judge this accurately, the enumerators had been trained in assessing the technique by an ergonomist. Lifting technique is not the only cause of injuries from handling heavy loads. Many factors apart from proper manual handling technique are involved: load size, weight, work environment, individual characteristics, work pace, etc. At any rate, about 26.4% of the respondents were found to have a good lifting technique. There was no clear relationship between having a good or bad lifting technique and gender, region, or age. The data do show that 69.2% of the farmers with a good lifting technique reported pain to the waist/lower back, compared with 83.1% of the cocoa farmers with a bad lifting technique, though this relationship did not exist for all body parts. Further research is needed to provide more clarity.

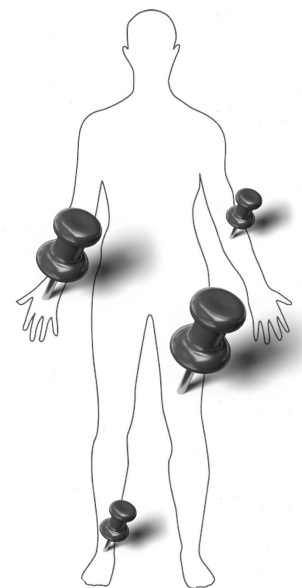
Out of the 73.6% of farmers with a bad lifting technique, 38.2% reported that “they often carry heavy loads” and another 6.8% reported that “they carry heavy loads all the time” clearly indicating room for improvement. About half of the respondents who carry loads said they would generally ask for help if somebody was around; about 23% would lift a heavy load only if somebody was around to help. Another 10% would rarely or never ask for help and the remaining 15% never carried heavy loads.

According to the experts, many musculoskeletal problems, such as pain, originate both from bad lifting techniques and from walking long distances, especially while carrying a load. The mean time taken to get a load to or from the cocoa farm was found to be 34 minutes, with a standard deviation of 28.3 minutes. About one-quarter of the farmers reported taking more than 45 minutes and around 5% took 2 hours or more.

### REPETITIVE STRAIN

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Most cocoa farmers are bound to experience repetitive strain injuries from overusing muscles or from using them for a long time, especially when force is applied. Symptoms include cramps, tenderness, stiffness, and/or a tingling sensation. The problem with repetitive strain injuries is to link the cause and the effect. One of the clearest symptoms is the tingling sensation, though this can also be caused by conditions such as

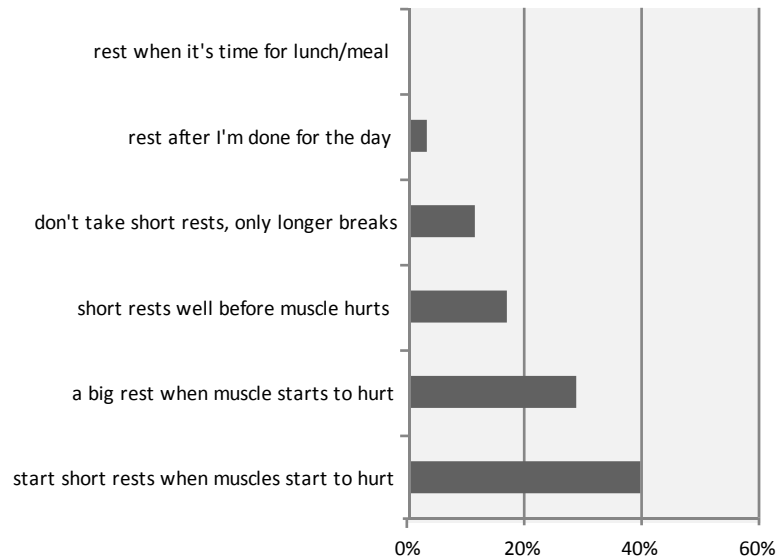




hypertension and diabetes.<sup>9</sup> Among the respondents this was reported to typically affect the leg (44%), hand/wrist (36.6%), ankle/foot (16.3%), and/or a arm (15.6%), with other body parts scoring under 3% (Fig. 16). Not all respondents were affected; around 20% reported no tingling or numbness from cocoa farming.

One of the best ways to prevent repetitive strain injuries is to take short breaks and to change tasks over the course of the day. Figure 17 shows that most farmers start taking short rests only when the repetitive strain is starting to cause pain, or they even choose to ignore it altogether and take only a longer break (for lunch) or stop at the end of the day. No more than 16.7% take precautions by taking short breaks well before the pain becomes apparent. With regard to changing tasks, more than half of the respondents do the same task all day (39%) or rarely change tasks (17.4%) during the day. The remaining (43.6%) do change tasks during the course of the day.

Figure 17 - Taking breaks to prevent muscle pain.



## ADAPTED TOOLS

Farm workers should ideally use tools that are adapted to their own size and strength. Unfortunately 45.5% of the respondents had never before heard of anything like smaller, lighter, or a dapted tools; 21.7% had heard of them but would not know where to buy them. One-third of the respondents knew where to buy them but only 4% actually owned smaller and/or lighter tools within their household. When asked whether such tools are generally used by people who would benefit from adapted tools, 82.6% responded that everyone uses the same tools, with the remainder claiming that adapted tools are (sometimes) used.

## 4.6 ILLNESS

Cocoa farming is done in a rural environment where there is often no separation between the living environment and the farm environment. Poor living conditions – contaminated drinking water, poor sleeping accommodation, and poor personal hygiene – juxtaposed with the hazards of the work environment create a recipe for a number of illnesses (Bruce 2001).

One of the modern doctors also pointed to the fact that rural living conditions predispose farmers towards succumbing to illness in general, and gave an example; “Cocoa farmers often take only one wholesome meal per day”. Separating illness resulting from cocoa farming from general illness is not an exact science. An attempt is made in the following section.

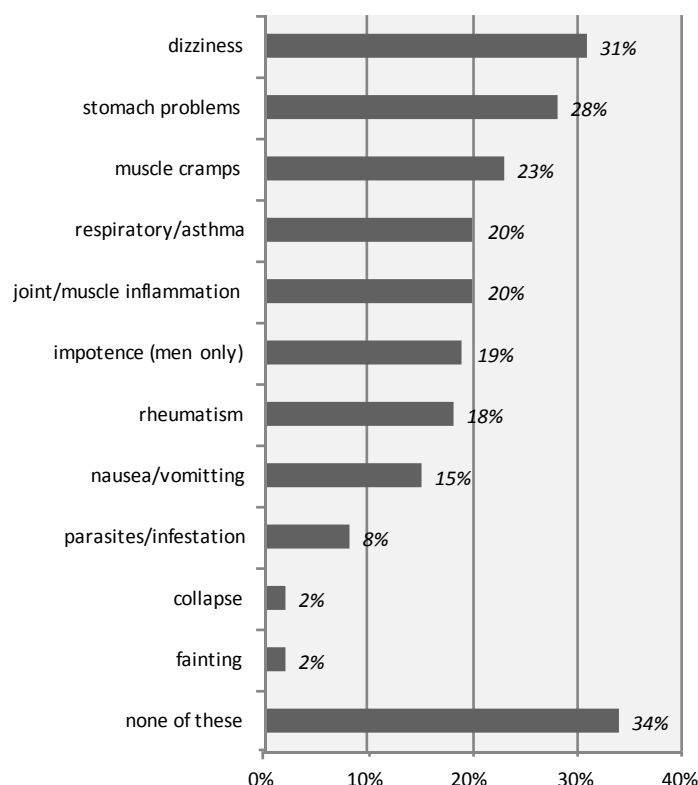
<sup>9</sup> In this survey the incidence of diagnosed hypertension was found to be 7.1% and 3.1% for diabetes. Doctors expect the actual number is much higher since many farmers are not yet aware of their condition.

## ILLNESS DUE TO COCOA FARMING

The respondents were asked how many days in the last year they had stayed home because of an illness which they felt was caused by cocoa farming. "Illness" was acknowledged to be quite a subjective concept. In most cases, farmers did not stay at home because of illness at all, but respondents reported an average of 3 days at home with a standard deviation of 18.23, mainly because the top 5% scored between 1 week and an entire year.

The respondents were also asked to speak about which "illness(es)" they had experienced in the last 2 years because of cocoa farming. Figure 18 gives an overview of the predefined response categories. Additional conditions that were mentioned under "other" included eye problems, fever, headaches, hernia, rashes, ulcers, and weakness.

Figure 18 - Experienced illnesses caused by cocoa farming.

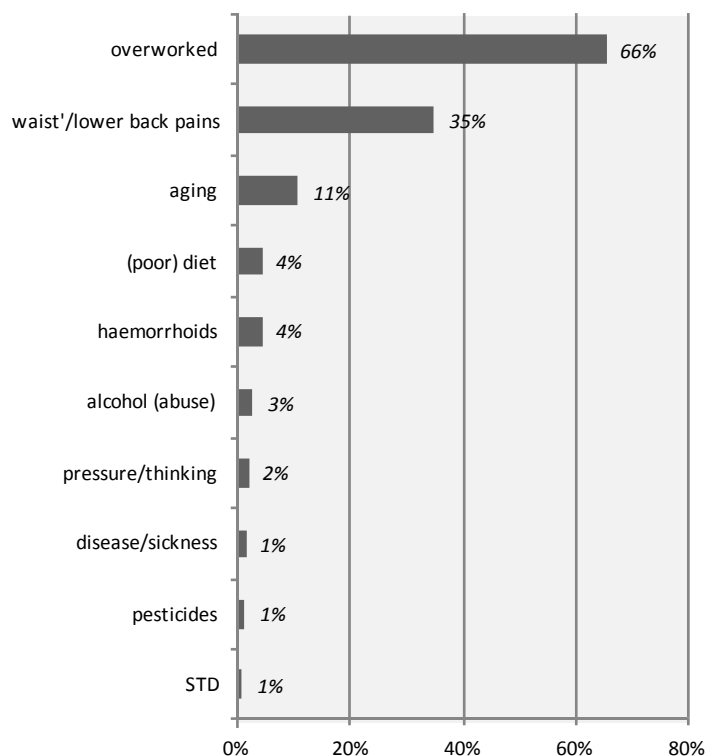


The survey questionnaire examined which cocoa farming activities had caused the respondent an illness in the last 2 years. Out of a list of 14 common activities, respondents could choose from weeding (25.2%), harvesting pods (15%), mixing and spraying pesticides (9%), clearing land (7.6%), and felling trees (5.7%) and nine other activities, none of which scored over 5%. More than 45% of the respondents indicated "none of these activities".

## IMPOTENCE

During the focus group discussions, to our surprise, "impotence" was mentioned as one of the conditions caused by (cocoa) farming, whereby impotence stood for "a general lack of sexual performance". Within the scope of this survey the true causes of this impotence cannot be medically proven. It is interesting, though, to see what the perceived causes were, especially because the issue was openly discussed among the cocoa farmers and was clearly important to them. The 10 most reported (perceived) reasons for impotence among male cocoa farmers are shown in Figure 19; these make it clear that the respondents do relate impotence to their work. Though doctors noted here that diabetes and

Figure 19 - Suspected cocoa farming-related causes of impotence.



hypertension (common conditions among farmers) are important independent risk factors for impotence, this was not known among the cocoa farmers, with only one respondent reporting it (0.2%). Pesticide exposure was also linked to impotence, but reported by just 1%. A doctor in a local hospital stated; “I would say it is sexual dysfunctionality as a result of stress, diabetes, and hypertension. The chronic medication can also decrease the libido. To me, only one in 30 has a proven link between waist pain/nerve problems, and impotence.”

## CURSES AND THE SPIRITUAL WORLD

Four respondents (1%) reported spiritual problems that had to do with cocoa farming. In all cases the perceived cause was somewhat obscure, though related to cocoa farming. A spiritual problem was suspected because the conditions experienced (sleeplessness, headaches, vomiting blood, and sudden pains all over the body) could not be understood or solved by modern doctors. The traditional healer confirmed that it was possible to upset something on the farm or in the forest, whereby an apparition would not be uncommon.

Nine farmers (2.1%) reported having been the victim of a curse during their lives because of cocoa farming. With a curse, the cause is quite clear. Five of them felt cursed after a dispute over cocoa land boundaries, two after complaining over the theft of cocoa, one because of an envious neighbor, and another after a dispute over the inheritance of cocoa lands. Although spirits and curses certainly are not a major OSH risk, the perceived risk of being affected by such problems has to be taken into account as it is a genuine cause of fear among many cocoa farmers.

## 4.7 INJURY

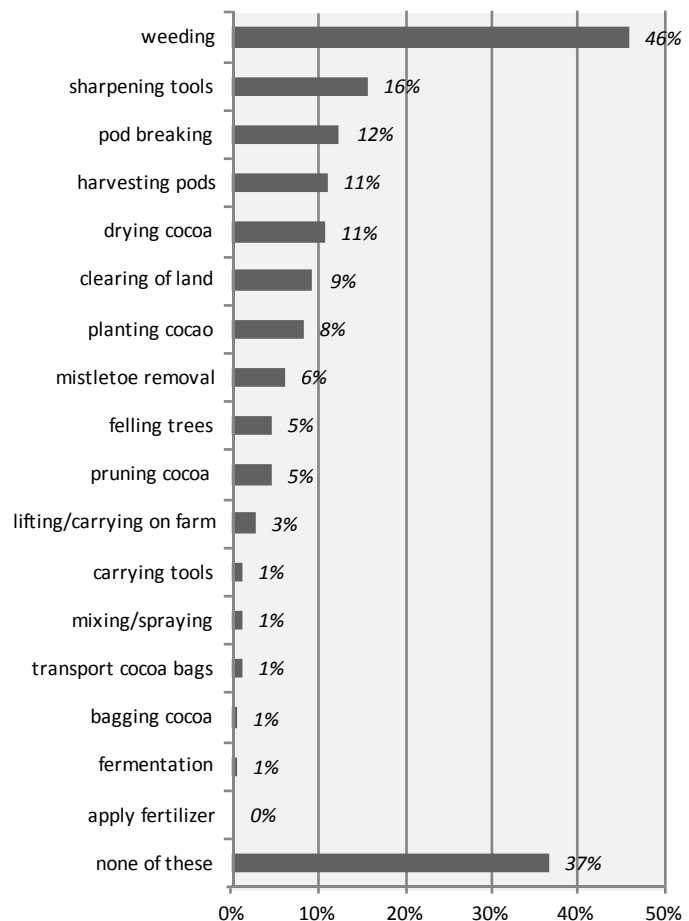
Cocoa farming takes place in a hazardous natural environment and cocoa farmers use a number of sharp and/or potentially hazardous tools. Therefore, injury is an important OSH risk. It is examined below.

### SUSTAINED INJURIES

Respondents were asked how many times in the last 2 years they had injured themselves on the cocoa farm in such a way that they needed to receive treatment. About 52% of the respondents reported having sustained such an injury, the average incidence being 1.75 times, with a standard deviation of 2.89. The top 10% of the respondents had injured themselves more than five times in the last 2 years.

Respondents were subsequently asked to indicate whether in the last 2 years they had sustained any kind of injury during any of the 17 predefined key cocoa farming activities. Of the activities listed in Figure 20, injuries mainly occurred during weeding (46%) and to a much lesser extent during the sharpening

Figure 20 - % injury during cocoa activities in last 2 yrs.



of tools (15.7%), the harvesting of cocoa pods (11%), and the drying of cocoa (10.7%). Other activities scored between 0 and 10%. No other significant activities producing injury were reported.

### WORST RECENT INJURY

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Out of the 63.3% of respondents who had sustained any kind of injury in the last 2 years from the activities listed in Figure 20, by far the largest group (41%) injured themselves most seriously during weeding, followed by harvesting pods (6%). The other activities all scored under 4%. Another 30.1% did not report a serious injury under this question, which is interpreted as their previously reported “any injury”: not being all that serious.

As illustrated (Fig. 21), the remaining 53.1% of respondents reported more serious injuries in the last 2 years to the leg(s) (43.7%), the wrist and/or hand (31%), the ankle and/or foot (13.2%), or the knee (7.1%). Between 2 and 5% of this group reported their most serious injury was r to the arm, head, back, or waist.

In an effort to assess the severity of the injuries, the injured 53.1% of respondents were asked to indicate whether a number of (arbitrarily chosen) realities applied to their injury. In 71% of the cases the serious injury caused the work to stop for some time and 40% were left with (big) scars. Nearly 33% rated the injury as small and 30% had to be treated at a hospital. Almost 6% reported the dislocation of a joint, less than 1% faced amputation or a broken bone, and in all, 2% sustained permanent damage from their worst injury in the last 2 years.

### WORST INJURY EVER

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Out of 418 respondents, 30.9% had never sustained a serious injury in their adult life while carrying out any of the 17 cocoa activities listed in Figure 20. The worst injuries in a cocoa farmer’s adult career are clearly sustained during weeding (38.5%), with all other activities scoring under 6%. Weeding is therefore the most dangerous activity, a fact that was previously demonstrated by the IITA/STCP (Tetty et al. 2009). Weeding is only distantly followed by the harvesting of pods (5.7%), clearing of land (4.3%), felling of trees (4.1%), mistletoe removal (3.6%), and the transport of cocoa pods on-farm (3.6%).

In the group of 291 surveyed farmers who had sustained a serious injury at some point in their life during cocoa farming, reported injuries were mainly to leg(s) (44.3%), wrist/hand (25.4%), ankle/foot (9.6%), knee (7.6%), head (6.2%), or arm (5.8%) (Fig.22). Between 2 and 5% of this group reported their most serious injury had been to the waist or trunk. These figures show that cocoa farmers run a high risk of limb injuries. Injuries to the head (which includes eyes and ears) seem to be less common but if they occur, they are slightly more often perceived as the worst injury ever.

Figure 21 -  
Most often injured body parts (2 yrs).

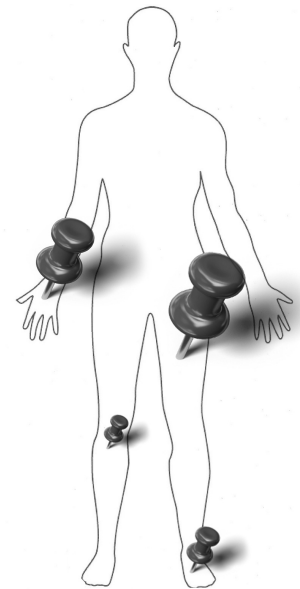
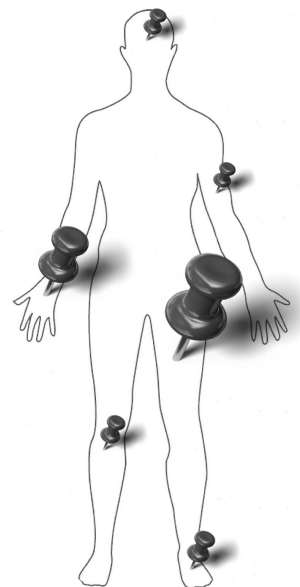


Figure 22 - Worst ever injured body parts



In terms of severity, the worst injury ever caused work to stop for some time in 82.8% of the cases, and 47.1% of respondents were left with (big) scars. Nearly 19.9% still rated the injury as small and 39.2% had to be treated at a hospital. Almost 5% reported the dislocation of a joint. None of the cases meant amputation, and in all, 2.7% sustained permanent damage from their worst injury ever.

## **CUTS**

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More than half of the cocoa farmers had cut themselves with a sharp farm tool in the last 2 years, but an average of 1.59 cuts were reported with a standard deviation of 3.037. About 5% reported they had cut themselves five times or more. Near cuts were most reported to have happened around 10 times in the last 2 years, with an average of 7.51, and only 13.3% of the farmers reported zero near cuts. It was less common for cocoa farmers to cut other nearby farmers with 1% of the cocoa farmers admitting they had caused one cut, and another 1% saying they had caused several cuts to another cocoa farmer.

Both the cocoa farmers and the doctors in the local hospitals reported that farmers knew what to do for a superficial cut. Only the most serious cuts are treated at hospitals where often the loss of blood is the most serious concern.

## **SHARP TOOLS**

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When presented with a list of eight sharp cocoa farm tools, 46.4% of the surveyed cocoa farmers reported that they had not cut themselves with any sharp cocoa farm tool in the last 2 years. No cuts were reported from the chainsaw, pruner, and rake. Not surprisingly, it was the cutlass or machete that caused the most cuts (53%), followed at great distance by the harvesting hook (“go to hell”), knife, and axe, which all scored well under 5%. Out of the 30.2% of cocoa farmers who consumed alcohol, just over 6% admitted they used sharp tools after drinking alcohol. The use of medication that might influence concentration while sharp tools were being used seemed to be a less important issue (1.4%).

## **LADDERS**

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Just over 6% of the cocoa farmers had fallen out of a farm tree while not using a ladder. The use of ladders on cocoa farms is somewhat limited with a round 50% reporting they sometimes or regularly use a ladder in the farm. Of these, 15% had fallen off a ladder in the last 2 years. Generally the fall was caused by the ladder not being placed correctly (42%), or not being stable (24%). In a quarter of the cases, the ladder broke. Over-reaching (27%) or failing to keep contact with the ladder with at least three limbs (12%) were other major reported causes. Finally, one in ten fell because of being attacked by insects or some other animal.

## **THE COCOA FARM ENVIRONMENT**

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On a cocoa farm there are many possible causes of injury. Animal bites or insect stings are very common, and were reported by 95.5% of the cocoa farmers for the last 2 years. Ants (88.3%) and bees/wasps (58.6%) are the main culprits, with leeches and other insects both scoring around 15%. The much more feared scorpions had stung 1% of the cocoa farmers and snakes had bitten 2.6%.

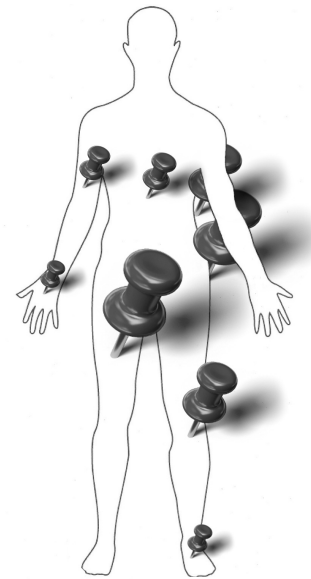
About 60% of the cocoa farmers reported receiving prick wounds over the last 2 years, with thorns (50%), tree stumps (26.2%), and branches (21.7%) causing most of the damage. Ulcers can be caused by scrapes and lacerations sustained on the cocoa farm and 11.4% of cocoa farmers reported they had suffered from at least one; less than 5% saw more than three.

About 81% of cocoa farmers reported injury or considerable irritation to the eyes, generally caused by debris (72.6%), insects (34.8%), branches (14.8%), or smoke (6.7%). Nearly all (95%) who reported injury or considerable irritation to the eye from farm chemicals turned out to have been doing the spraying themselves. All in all, out of all the farmers (53%), who do their own spraying, 17.1% reported eye problems caused by farm chemicals.

Falling objects caused some kind of injury to 39.8% of the cocoa farmers over the last 2 years. Falling cocoa pods (26.7%) and branches (8.6%) were the main problems. The falling of parts of sharp cocoa farm tools – a specific problem reported by a doctor and two experts – was reported by only 1.4% of the cocoa farmers.

Skin injuries or irritation were issues for 41.7% of respondents, with plant irritants the main culprit (30.7%), and insecticides (10.2%). Among the group of respondents who do their own spraying, this percentage was 16.7%. Other selected causes of skin injury or irritation were insect bites (8.3%), parasites (7.6%), fungicides (5.5%), and herbicides (4.5%). Injuries from fertilizers, burns, and fungi were selected by only a handful of respondents.

Figure 23 - Main injuries caused by falls.



## FALLS AND SLIPS

Over the last 2 years, most respondents (78%) had not injured or hurt themselves by falling or slipping on the way to or from the cocoa farm. On average, an incidence of 1.02 falls was recorded, but this figure was mainly due to the 10% of respondents who had reported more than four falls (in which they hurt or injured themselves). Falls and slips on the farm showed similar trends as 77.6% of cocoa farmers had not injured themselves. The average incidence was lower (0.58 times) with around 10% of the cocoa farmers reporting more than two incidents.

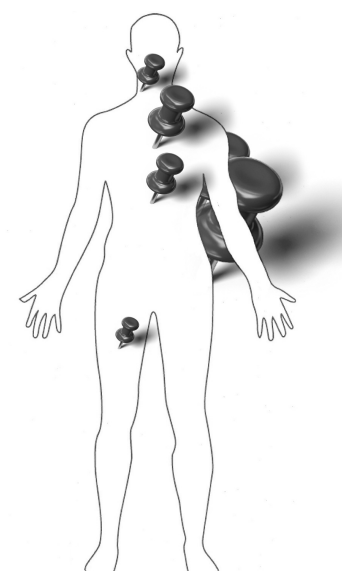
The main reported injuries resulting from a fall or a slip in relation to cocoa farming (n=94) were to the leg(s) (45.7%), the waist/lower back (38.3%), the knee(s) (28.7%), the back (27.7%), the trunk (13.8%), the arm(s) (11.7%), and ankle/foot (7.4%) (Fig. 23).

## LIFTING AND CARRYING

When specifically asked about the lifting and carrying of heavy loads, 14.5% respondents reported they had hurt themselves in the last 2 years. The mean incidence was 0.22 times, with around 5% reporting more than one incident.

The major reported injuries resulting from lifting and/or carrying heavy loads in relation to cocoa farming (n=61) were to the waist/lower back (57%), the back (34%), the chest (23%), the trunk (16%), and the neck (10%), as shown in Figure 24. Injuries from lifting and/or carrying also depend on the lifting technique, according to the experts, but the data didn't show a clear correlation.

Figure 24 - Main Injuries caused by lifting/carrying.





## 4.8 AGROCHEMICALS

Respondents reported the use of many different farm chemicals. In fact, only 4.3% reported that they did not use any pesticides on their farms; 58.6% reported they used all three groups of pesticides. Out of those three groups, the insecticides were reported to be used on almost all respondents' farms (97.6%), followed by fungicides (86.9%), and herbicides (76.9%). About 87% of the respondents reported that they benefited from mass spraying on their cocoa farm(s); 71.9% of respondents had other people apply one or several pesticides for them, and 52.9% applied pesticides themselves. Only 0.7% reported that absolutely no spraying had been done on their farm(s). Fertilizers were used by 75.7% of the surveyed farmers.

More than half of the respondents (55.5%) reported that while the farm is being sprayed, other people are present who are not involved in the spraying and who wear no protective clothing. Another 2.4% reported that this was not always the case but it happened "often" and 1.4% said it happened "rarely". This means that on 6 out of 10 of the cocoa farms these "other people" also experience some level of exposure to the agrochemicals, while they are present and unprotected when the cocoa farm is being sprayed.

Based on the interviews with experts and doctors, most health effects from farm chemicals are expected to be associated with insecticide use, because its direct health effects are most apparent. Within this survey, only immediate OSH effects from the use of farm chemicals were discussed.

### ACTIVE INGREDIENTS

Farmers were asked to tell the enumerators which chemicals were used on the cocoa farm(s) where they worked. The chemical trade names have been translated to their active ingredient(s) with the help of a major agro-input distributor in Ghana. Less than 1% of respondents did not mention a single product and about one-quarter reported that they did not know all the names of all the products used. About 37% did not know which product was used by the mass spraying gangs that sprayed the farm(s) they work on.

Figure 25 - List of reported active ingredients.

| Group        | Active ingredient                 | Self-acquired | Mass-spraying <sup>10</sup> | Both  |
|--------------|-----------------------------------|---------------|-----------------------------|-------|
| Fertilizers  | Mineral                           | 70.5%         | n/a                         |       |
|              | Organic                           | 0.5%          | n/a                         |       |
| Fungicides   | Copper/Cupric/Cuprous (hydroxide) | 32.6%         | 12.6%                       | 24%   |
|              | Metaxyl                           | 19.5%         | 21.4%                       | 15.2% |
| Herbicides   | Atrazine                          | 2.9%          | n/a                         |       |
|              | Glyphosate                        | 34.8%         | n/a                         |       |
|              | Paraquat                          | 21.1%         | n/a                         |       |
| Insecticides | DDT <sup>11</sup>                 | 3.3%          | n/a                         |       |
|              | Diazinon                          | 77.4%         | n/a                         |       |
|              | Fenvalerate                       | 0.5%          | n/a                         |       |
|              | Imidacloprid                      | 47.4%         | 12.9%                       | 23.8% |
|              | Lambda-Cyhalothrin                | 0.5%          | n/a                         |       |
|              | Pirimiphosmethyl                  | 0%            | 36.4%                       | 0.2%  |
|              | Pyrethrum                         | 0.2%          | n/a                         |       |
|              | Thiamethoxam                      | 14%           | n/a                         |       |

<sup>10</sup> COCOBOD's mass spraying teams are presumed to use a range of products containing the following active ingredients: copper hydroxide, imidacloprid, metaxyl and pirimiphos-methyl. This means that the figure should be read to mean that the cocoa farmer's farm may have been sprayed with any or all of these products (Afrane and Ntiamoah, 2011).

<sup>11</sup> DDT has officially been banned.

Figure 25 shows all the active ingredients of the pesticides the surveyed farmers use. Though previously, 75.7% reported the use of fertilizers, 70.5% reported the use of an inorganic brand of fertilizer and no more than 0.5% reported the use of an organic fertilizer. This shows that the chosen approach of self-reporting of farm chemical use must have led to some level of under-reporting.

On average, the respondents reported using 1.25 different fungicides (mode=2), 0.61 different herbicides (mode=0), and 2.17 different insecticides (mode=2). Almost 40% of respondents used three or even four different insecticides. Farmers also reported their use of products that turned out to be ineffective and therefore were thought to be counterfeit or expired.

### INSTRUCTIONS FOR USE

None of the respondents who do their own spraying (n=222, 53% of the total) reported that they either “always” or “never” paid attention to the label on chemical products, although this is essential in order to understand the risks involved. Most cocoa farmers (36%) seem to depend on the clerk in the shop where the product is bought for an explanation of what is on the label. Another quarter of the respondents reported that they already knew what to do. Other responses showed that farmers get this information through the radio (16.2%) or look at the label sometimes (12%) or at least once (10%).

Out of all respondents (n=420), 46.7% were not involved in mixing or putting the chemicals into the sprayer (see Fig. 26). Mixing and loading chemicals are clearly tasks that are generally performed by men. Those who mix chemicals are almost always working alone.

Out of the 53.3% of the respondents who mix chemicals themselves, almost 6 out of 10 (58.5%) reported they had touched the chemical solution with their bare hands while scooping it, mixing it, or while putting it in the sprayer.

Figure 27 shows which techniques cocoa farmers reported they used to assess the potency. The overwhelming majority (79%) measure carefully before mixing, but smaller percentages use techniques that certainly have a negative effect on health, such as inhaling the vapors (6.3 plus 3.6%) and even dipping in a hand or finger until it “feels hot” (0.9%).

Figure 26 - Direct involvement in mixing and/or spraying.

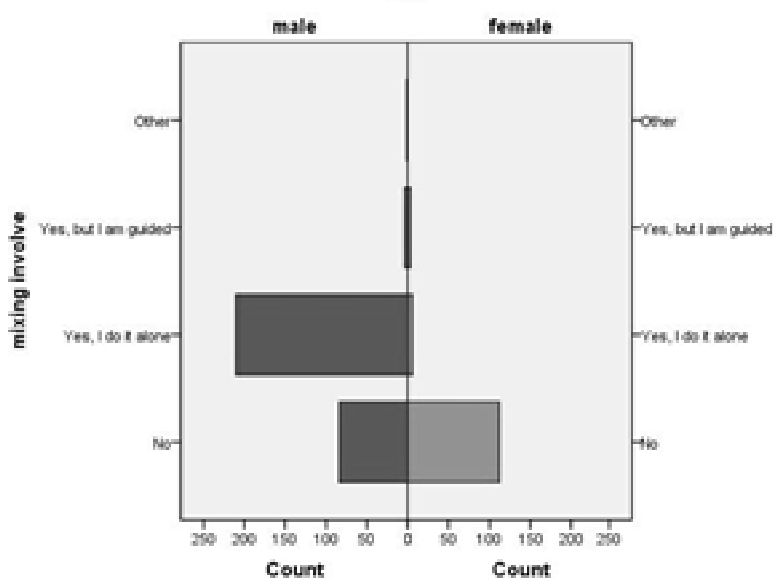
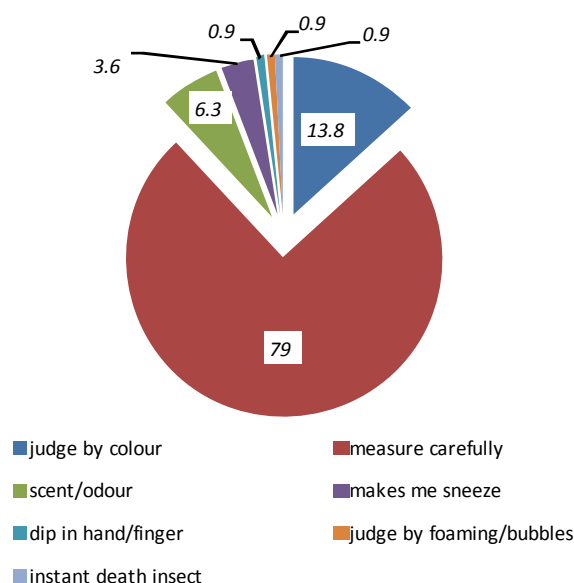


Figure 27 - Techniques to assess mixture potency.



Another practice that is cause for concern is that about one-quarter (24.6%) of those who mix and spray reported they would blow through the nozzle if they found it blocked.

## DIRECT EFFECTS ON THE FARMER’S BODY

Respondents who did their own spraying (n=222) were asked whether they had ever experienced any effects on their body after spraying a cocoa farm, or in the days immediately afterwards. The same question was asked of respondents who reported being present on the cocoa farm while it was being sprayed by someone else (n=332 or 79%). The reported direct health effects for both groups are shown in Figure 28.

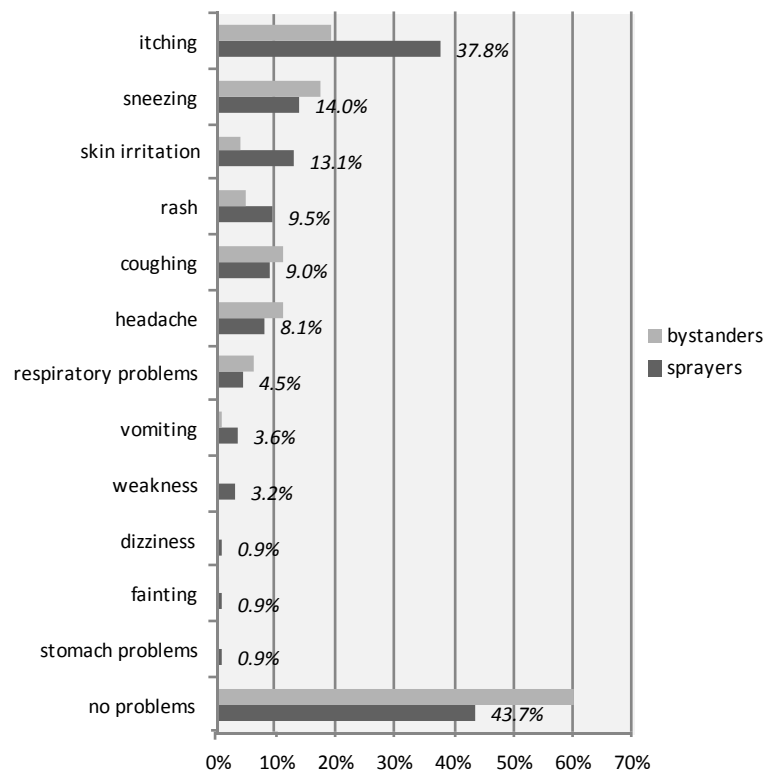
In this list of perceived immediate health effects reported by cocoa farmers after spraying, the first important observation is that more than half (56.3%) indeed report effect(s) caused by farm chemicals. Most effects are in the form of some kind of irritation but other more serious effects that should be attributed to varying levels of intoxication are also observed among the things reported by 1 to 8% of cocoa farmers (if we include headaches). All in all, out of the group of 222 farmers who do their own spraying, 28.4% reported one effect, 15.3% reported two effects, 5.4% reported three, 5.9% reported four, and 1.4% even reported five.

Lesser, but still important effects were measured among bystanders; the cocoa farmers who are present at the time someone else sprays. In this last group of 79% of all respondents, only 15% (always) wear some kind of PPE. Surprisingly, the “poor eye sight” that had been cited on a number of occasions during the FGD did not show up in the data, although this may be perceived as a long-term rather than a direct effect.

## POISONINGS

Respondents were asked whether they had ever experienced sudden illness during or directly after working with cocoa farm chemicals. About one in five of all surveyed cocoa farmers (20.1%) reported they had experienced such an effect. If the group is split into those who do their own spraying and those who do not, the percentage goes up to 33.3% for the sprayers and down to 5.1% for the non-sprayers. On average, the respondents knew 1.23 people (std. dev. of 2.142) who suddenly fell ill during or directly after working with cocoa farm chemicals. About 1 in 5 cocoa farmers reported that they knew of three or more such cocoa farmers. The large variation between different communities is striking, and points both to localized (knowledge) problems and/or respondents reporting on the same person(s).

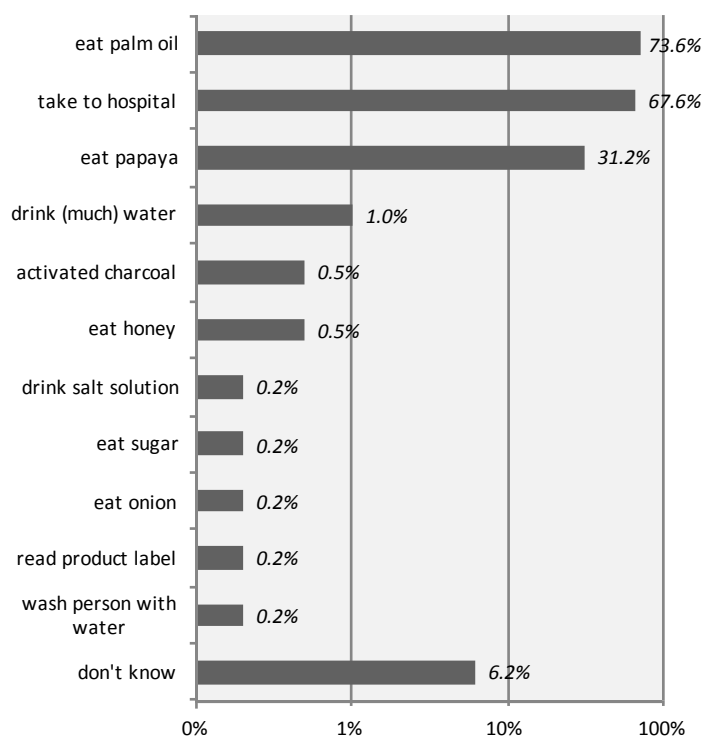
Figure 28 - Perceived direct health effects from pesticide application.



The same holds true for observations about people who died after working with farm chemicals. The large majority of respondents (86.2%) reported they did not know of a single case and one in ten (9.3%) had heard about the death of someone they did not know personally. The remainder either knew someone personally (3.6%), cared a great deal about that person (0.5%), or even knew several people who had died (0.5%).

First aid measures to be taken in case of poisoning vary from product to product and should always be mentioned on the product label. Figure 29 shows all of the first aid measures the respondents reported they would take if someone had been poisoned by a farm chemical (it should be noted that the X-axis scale is logarithmic). It was disappointing that only 1 out of 420 respondents (0.2%) mentioned that he would read the product label.

Figure 29 - Reported first aid measures in case of poisoning.



### RISKY BEHAVIORS DURING APPLICATION

Data were also collected on specific risky behaviors while farm chemicals were being applied. Eating during the application of farm chemicals was reported by 2.7% of the group who do the spraying themselves (n=222). After spraying a cocoa farm, most cocoa farmers are generally tired, hungry, and thirsty. Of the respondents who do their own spraying, 1.4% did not wash first before eating and drinking after having sprayed the cocoa farm. Another 41.9% reported washing only their hands, and the majority (56.8%) bathed first before eating.

Of the six cocoa farmers who do their own spraying and who admitted to drinking alcohol (while performing cocoa farm work), none drank before or during the application of farm chemicals. In addition, none of the seven smokers who do their own spraying smokes while using farm chemicals. Only one (0.5%) of the spraying farmers reported the use of medication while spraying.

Figure 28 shows how presence in a cocoa farm while it is being sprayed can cause negative health effects. Out of the group of “bystanders” (n=332), 3.6% reported eating while spraying is going on. In fact, 3.8% reported that it was possible that food was prepared on the farm while it is being sprayed. None of the bystanders reported either smoking (n=16) or drinking (n=106) during spraying.

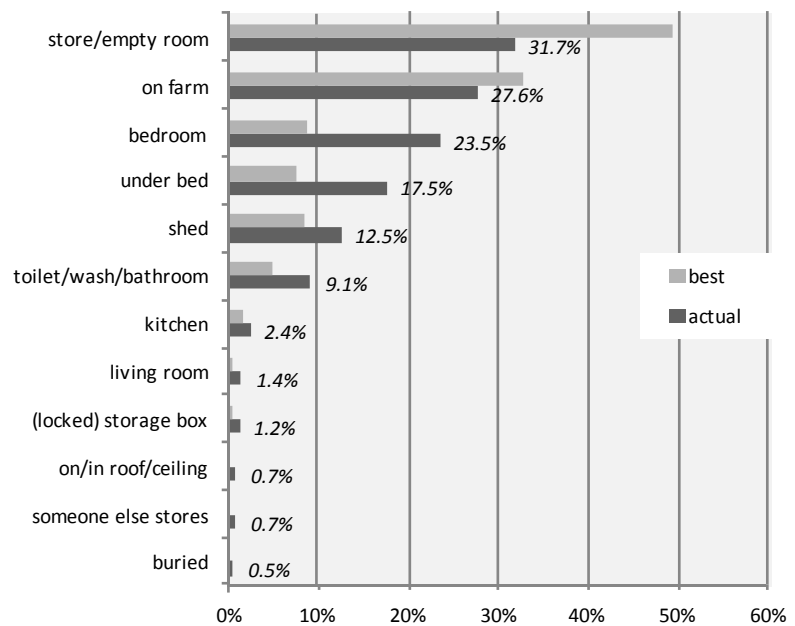
With regard to two vulnerable groups, 3.6% of all 420 respondents reported that pregnant women had been present on the farm while it was sprayed, and another 1.4% reported that “it can happen”. For children, these percentages were reported to be 11.2% for their presence and 6.4% for the possibility of their presence. Almost all the figures in the last two paragraphs are cause for major concern.

### EMPTY CONTAINERS AND STORAGE

A small percentage of the surveyed farmers (1.9%) reuse empty containers, though 0.5% clearly specified that they don’t reuse them to store food.

All respondents were also asked where they stored their cocoa farm chemicals and many different answers were recorded. This question was followed by the question about where cocoa farm chemicals would best be stored, in general. The results of these two questions are shown in Figure 30. Although doctors have mentioned that accidents involving farm chemicals and children are known to have happened, none of the cocoa farmers in this survey reported any “accidents within the community involving cocoa farm chemicals”, and the reby automatically also none involving children.

Figure 30 - Actual (and perceived best) storage location for farm chemicals.



## RE-ENTRY TIME

From our group of respondents whose cocoa farms get sprayed (n=417), only one farmer (0.2%) reported that it was necessary to look on the label to find out when it was safe to go back onto the cocoa farm after it had been sprayed. A small percentage of respondents (3.8%) did not wait at all before returning to the cocoa farm and 7.7% reported returning within hours. About half of the cocoa farmers returned after a rather short re-entry period of only one or two days (52.1%) and another quarter after 3–4 days (24.7%), which is verging on being a safe re-entry time for some products, though not for all. The remaining 11% returned only after 5 days or more, which according to the experts is a safe re-entry time for most products.

## 4.9 PERSONAL PROTECTIVE EQUIPMENT (PPE)

This section looks at knowledge about the use of the correct PPE, actual use of PPE, and the problems that cocoa farmers identify when it comes to their use and availability. The respondents answered each question freely and were not asked to “tick the correct boxes”. This resulted in cocoa farmers speaking about incorrect equipment. As a result, each section on a new activity will begin by mentioning the advised correct PPE for the activity (Tetty et al. 2010). Not all cocoa activities are addressed in this section on PPE, and neither are issues such as the proper usage, maintenance, and storage of PPE.

### GENERAL COCOA FARM WORK

First of all, cocoa farmers were asked to describe the kinds of farm gear they could use to protect their bodies during cocoa farming. The PPE that is actually advised for use during any activity on the cocoa farm (Tetty et al. 2010) include mid-calf length rubber boots, long trousers, and a long sleeved shirt or blouse.

The subsequent question asked respondents to describe which kinds of protective farm gear they always wear when going to work on the cocoa farm. The final question examined which protective farm gear respondents knew they should always use, but which they did not have. Figure 31 provides an overview of the answers given.

On average the respondents (n=420) reported about 4.12 different correct forms of PPE (with a median of 3 and a std. dev. of 1.754). More than half of the cocoa farmers (62.1%) wore the three previously mentioned items of advised PPE<sup>12</sup>. A small group of respondents (4.3%) incorrectly mentioned “slippers” as PPE and a couple of individuals (0.2–1%) spoke about using other incorrect forms of PPE (cutlass, sandals, short sleeved shirt, singlet, and skirt).

The PPE that respondents felt was most often lacking included the wellington boots (39.3%), overalls (28.6%), gloves (18.1%), goggles (16.9%), and respirators (12.4%), although these last three are recommended only for specific activities. On average, cocoa farmers felt they lacked 1.37 items of PPE (with about 6% reporting they miss five or more items of PPE).

### CLEARING LAND OR WEEDING

The PPE recommended for clearing and weeding are the same as for any other cocoa farm work (Tetty et al. 2010). The respondents (n=417) were again asked which PPE they used themselves while clearing land or weeding and, right after that, which PPE they knew they should (also) use but which they lacked. Results are shown in Figure 32. Consistent with the previous paragraphs, 64.7% of the cocoa farmers used the three recommended PPE items (or similar) and the items they most felt they lacked were wellington boots (35%) and overalls (16.1%). Nearly half (47.5%) responded that they didn’t lack anything. Again, a small proportion of respondents (6%) mentioned incorrect items of PPE, with slippers again scoring 4.3%.

Figure 31 - Knowledge and use of PPE on cocoa farm.

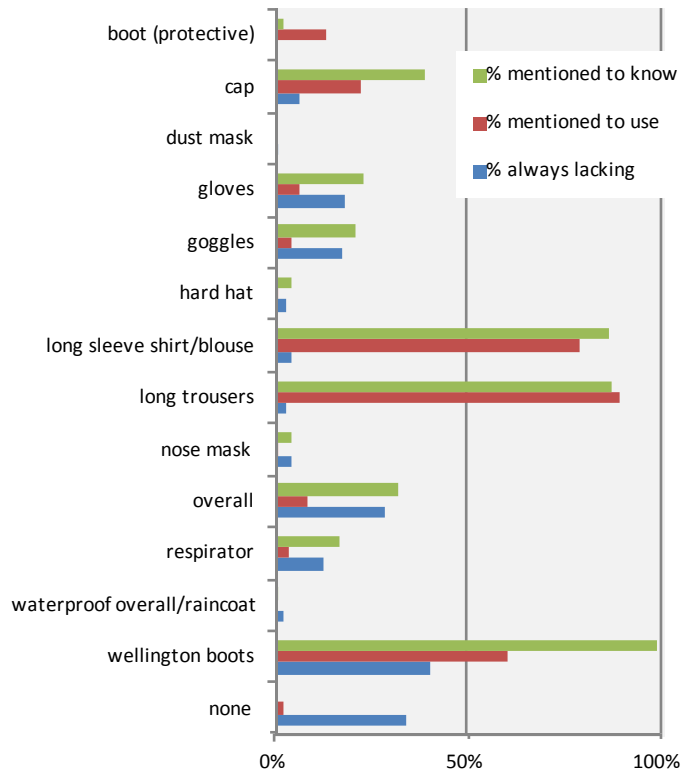
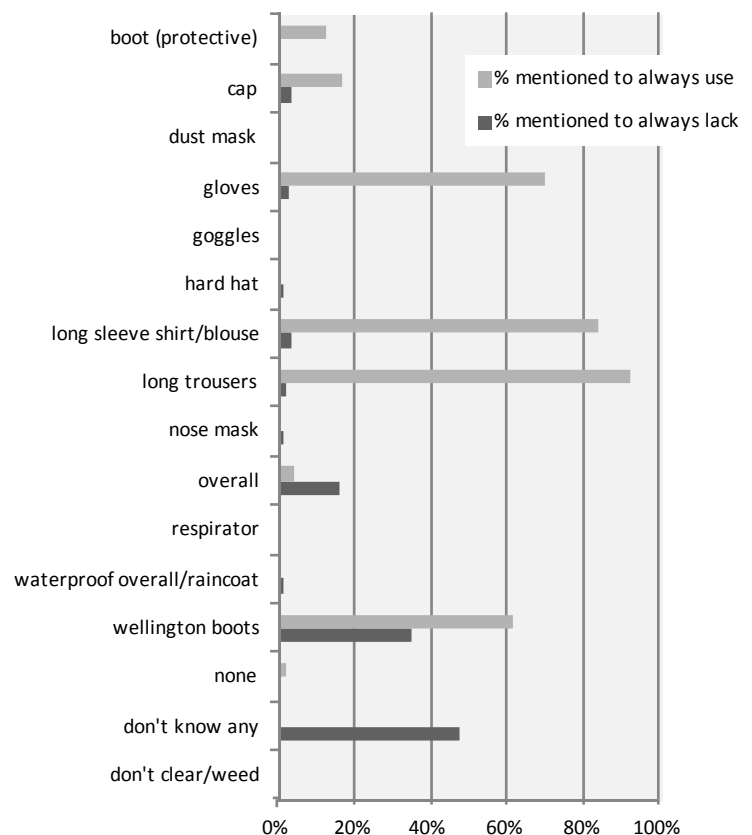


Figure 32 - Use and lack of PPE: clearing/weeding.



<sup>12</sup> Protective boots were also accepted as a replacement for the wellington boots and the combination of long trousers and a long sleeved shirt or blouse as a replacement for overalls.



## APPLICATION OF PESTICIDES

A longer list of eight different kinds of PPE is recommended for the application of pesticides. As well as the wellington boots, long trousers, and long sleeved shirt/blouse (secured at the wrists with elastic bands), cocoa farmers should also use waterproof overalls or plastic raincoats, a plastic hat or cap, closed goggles, plastic gloves, and a respirator.

All respondents were first asked which protective farm gear should always be used by any person who applies pesticides, fungicides, or herbicides, and subsequently, those who did their own spraying (n=198), were asked which protective gear they personally used when applying insecticides, fungicides, or herbicides on the cocoa farm. Results are shown in Figure 33. Out of the eight recommended items of PPE, respondents reported knowing about an average of 5.76 items (with a mode of 6 and a std. deviation of 1.093). The actual use of PPE was lower, with an average of 3.97 items (with a mode of 4 and a std. deviation of 1.487).

Only 0.5% of the respondents correctly reported all eight recommended kinds of PPE, although 28.2% mentioned seven, and 36.5% mentioned six. When it came to actual use, less than 5% used seven kinds of PPE and none used all eight.

## BROADCASTING FERTILIZER

When broadcasting fertilizers on a cocoa farm, again the use of the three standard items of PPE is recommended plus two additional items: plastic gloves and a dust mask (if fertilizer is used in a powder form) (Tetty et al. 2010).

Nearly all respondents (n=418) were asked which protective farm gear should always be used by any person who broadcasts fertilizers. Subsequently, those farmers who used fertilizers (n=318) were asked which PPE they personally used when broadcasting fertilizers on the cocoa farm. In this group 13.5% reported they did not broadcast fertilizer and when this corrected group of n=275, is used, the results of both questions are shown in Figure 34.

Figure 33 - Knowledge and use of PPE: application pesticides

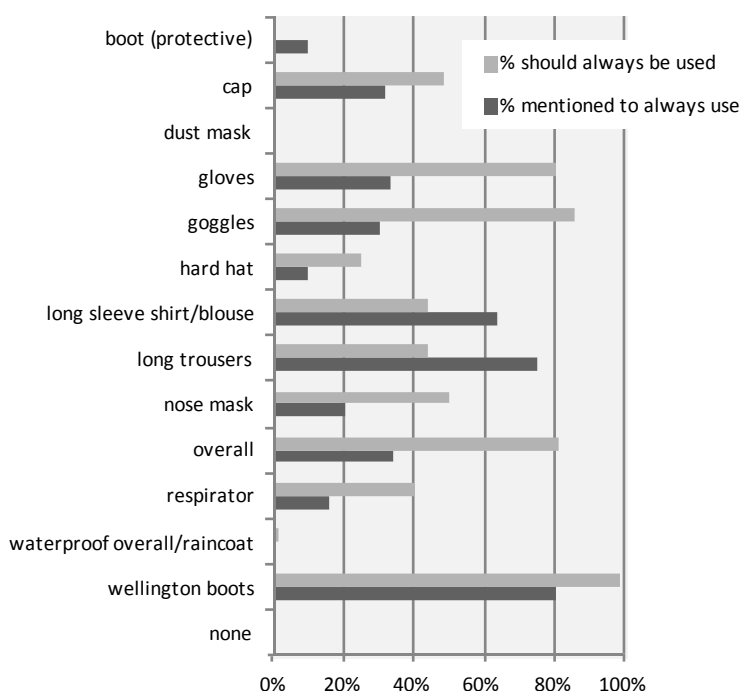
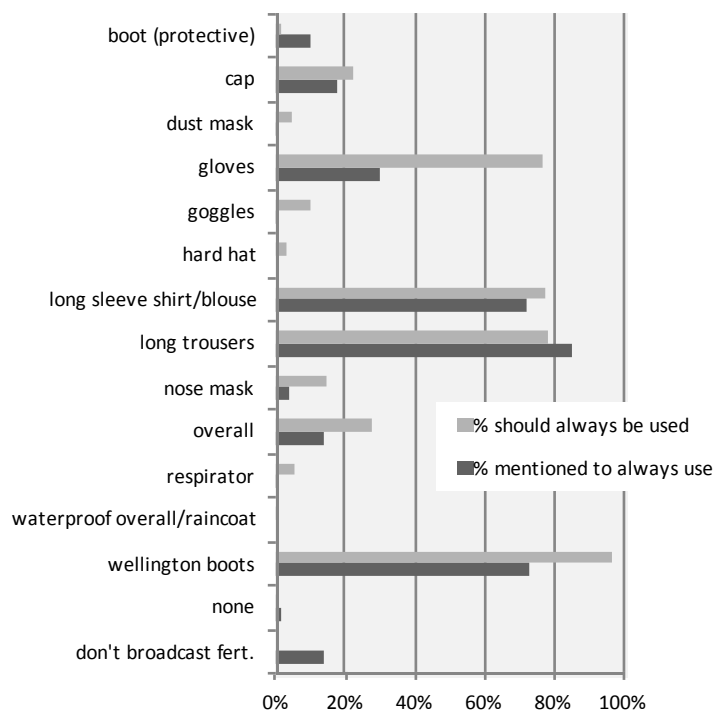


Figure 34 - Knowledge and use of PPE: broadcast fertilizers.



Out of the five recommended items of PPE for use when broadcasting fertilizer all respondents reported knowing, on average, four items (with a mode of 4 and a std. deviation of 0.891). The actual use of PPE among those who actually broadcast fertilizer was, on average, 2.99 (with a mode of 3 and a std. deviation of 0.942). This means that, on average, farmers are not protecting themselves enough. No more than about 5% correctly reported the names of all five recommended kinds of PPE.

#### 4.10 LOSSES

Nearly all respondents (n=419) were asked how many times they had visited a doctor because of a cocoa farming-related issue in the last year, which resulted in an average of 1.62 times, but a mode of 0 (std. deviation of 3.242). Two-thirds (63%) of visits to doctors were due to illnesses, followed by visits related to pain (22%), and finally visits following an injury (15%). Figure 35 shows that the respondents reported an average loss of 25 days on the cocoa farm over the last year due to pain, illness, or injury caused by cocoa farming. The median, however, is only 6, with the first quartile at 3 days and the third quartile at 15 days. This skewed average is due to the top 10% who reported a total of 60 days or over, an effect which could not be clearly attributed to factors such as age or gender.

Figure 35 - Reported sick leave days lost to OSH issues.

| Cause (due to cocoa farming) | Average | Median | Mode | Std. deviation | 25 percentile | 75 percentile |
|------------------------------|---------|--------|------|----------------|---------------|---------------|
| Pain                         | 9.55    | 6      | 0    | 11.891         | 3             | 14            |
| Illness                      | 10.45   | 3      | 0    | 25.396         | 0             | 10            |
| Injury                       | 5.01    | 0      | 0    | 14.038         | 0             | 3             |
| All three                    | 24.95   | 15     | 0    | 32.009         | 5.25          | 32            |

The replacement value of one day of work is a round 8 Ghana Cedis/day in the average cocoa community at the time of the survey. On average, the respondents reported paying an average of 22.6 Ghana Cedis for a visit to the doctor including transportation costs (with a mode and median of 20). Although it was a lot to ask cocoa farmers to provide such answers off the top of the head, yearly expenditure on medication resulting from pain, illness, or injury on the cocoa farm was, on average, estimated at 36.3 Ghana Cedis (with a median of 25 and a mode of 20).

When all that is together to come to a preliminary indication of what the median cocoa farmer – financially – perceives to lose to OSH issues in cocoa farming, the yearly estimated cost comes to  $(15 * 8) + (1.62 * 20) + 25 = 177$  Ghana Cedis or about US\$110 at the time of the survey.

## 5 DISCUSSION OF SURVEY RESULTS

It is clear that up till now the topic of OSH in cocoa farming has been underexposed in interventions that seek to promote sustainable cocoa farming. The fact that few reliable data are available on what is actually happening in the field has not helped either. Even though organizations such as the STCP and cocoa certifiers have recently developed training modules on the topic, the impact of such interventions will remain unclear until a baseline is set. This section sets out to discuss the results presented in the previous section, at times combined with observations from qualitative research. The objective is to create more insight into how future interventions could possibly have a positive impact on cocoa farmers' lives. The discussion in this section is therefore expected to be of interest to a broad audience of policymakers, development practitioners, cocoa certifying bodies, the private sector including both cocoa and agricultural trading companies, etc.

### 5.1 DEMOGRAPHICS

When we look at the profile of cocoa farmers in this survey, the recorded median age of 48 is not surprising when compared with other studies (Forts on 2011; Hainmueller et al. 2011), although unsettling with regard to the sustainability of the cocoa sector in the future. Cocoa farmers all over the West African cocoa belt are known to be primarily male and greying, and to include retirees. Another striking difference among respondents was the large disparity in schooling received by men and women, with up to one-third of women respondents not having received any schooling. The survey results show clearly that the best media route for reaching large numbers of cocoa farmers remains the radio. Particularly under-schooled women cocoa farmers may need to be reached with adapted technical messages.

Most cocoa farmers are male household heads. Cocoa farmers' households are larger than the average rural households and generally include several adults and children. This supports the view that cocoa farmers' households are a key unit to approach with development interventions. Six out of ten respondents were self-proclaimed "migrants". Cocoa farmers who weren't born (and raised) within the community may approach their cocoa farm issues differently from indigenous farmers (for example, differences in matrilineal and patrilineal systems). This is also because their statuses within the community and family relations are generally organized differently. Cocoa communities can be especially heterogeneous in the Western Region, sometimes called "the final cocoa frontier" (Knudsen 2007), with influxes from almost all regions of Ghana.

Photo 7 - The typical cocoa farmer is an aging male household head, often a migrant.  
(© R. Asare)



Most respondents owned at least one farm, though it was often small-sized and showing low productivity (Hainmueller et al. 2011). The special status of cocoa as a major cash crop that – unlike other cash crops – is primarily produced by smallholders, underlines its importance for household resilience and food security. Monetary income, often derived only from cocoa farming, is increasingly needed for health care, consumption goods, and education expenses. Virtually all respondents intercrop cocoa with food crops such as cassava, plantain, and maize. With pressure mounting on available land and on food prices, the interrelation between cocoa farming and food security begs for more multi-disciplinary research. Farmers' organizations are the preferred counterpart organizations for many development initiatives, since they are expected to be the appropriate conduit for extension and enlightenment messages. However, their reach among the respondents in this survey was quite limited, unlike the religious organizations. Strategies to strengthen the farmers' organizations remain necessary but interventions need also to focus on how to reach the individual cocoa farmer most effectively. The conclusion that cocoa farmers – professionally – show low rates of self-organization seems justified.

## 5.2 HEALTH

Most respondents were satisfied about their health, with a minority of 6% reporting poor health. In a population with a high average age this is not surprisingly high. Cocoa farmers, due to the rural environment and challenges in hygiene both at home and on the farm, suffer from a myriad diseases that are difficult to disaggregate as work-related or not. Fortunately, compared to many other African countries, the impact of HIV/AIDS on the economically active populations remains limited. According to the 2008 DHS, malaria is hyper-endemic in Ghana and constitutes one of the leading causes of morbidity and mortality, especially among pregnant women and children. In this survey, all the family members slept under bed nets in only one-third of the households.

A challenge when occupational health is considered – disaggregated from general health issues – is that statistics in hospitals in Ghana neither relate health problems to agriculture nor distinguish between domestic and occupational injuries. Whereas public health and occupational health in a Western context can more easily be distinguished, in Ghana both are intertwined as the farmers practically live on their farms.

Most respondents made their own decisions about health care, though women in male-headed households tended to discuss it with their husbands. It turns out that very few farmers have received any professional training on OSH hazards in cocoa farming. (Modern) doctors also point to the difficulties they have in changing persistent behavioral patterns with casual interventions. As cocoa farmers are more exposed than other farmers to extension services, NGOs, and the private sector companies, the doctors expect that the integration of proper OSH training could potentially have a large impact in cocoa communities. The health staff in local clinics reported neither having much time nor the right tools to educate farmers on OSH hazards. One doctor reported: “If you give them a treatment of good advice, they will take it for a number of days. Like, even if you tell them to take all the pills, they will store half when feeling better. They will go back to the old ways in days.”

Ghana’s commendable national health insurance scheme (NHIS) has the potential to reduce the burden of health care costs – reported often to be higher in rural areas (Mock et al. 2005) – for more and more cocoa farmers. On average, only half of the members in cocoa farmers’ households are covered. Specialists mentioned that cocoa farmers covered by NHIS tend to seek treatment earlier. This leads to fewer complications, quicker recovery, less cost in the long run, and less loss of productive capacity.

Photo 8 - Example of NHIS member card  
([www.NHIS.gov.gh](http://www.NHIS.gov.gh)).



Often respondents will seek medical help from modern health facilities only after trying home and herbal treatment and/or the pharmacist. Traditional healers may still perform first aid in case of accidents. Doctors show frustration with the way self-treatment can complicate simple injuries. One doctor fulminated against the omnipresent advertising for herbal medications: “We have no control over it, but they come in with the complications! 98% believe in it. It has been around much longer. We are the second line treatment.” Local doctors are also frustrated with the number of preventable injuries they see.

This survey examined a number of risk factors that might increase OSH risks on cocoa farms. The influence of most of these risk factors on OSH risks could possibly be reduced through training. First, respondents showed quite a high use of (general) pain killers, averaging 5.5 intakes a week. Doctors also pointed to some mis use of heavier painkillers, which can cause drowsiness and may increase injury rates on the farm. Secondly, smoking, especially on farms, was found not to be a priority concern.



Finally, alcohol consumption is known to be one of the highest risk factors for death and disability worldwide, and to increase the risk of accidents in the workplace. It also aggravates the risk of relational and other social issues causing stress, another factor that is thought to increase the risk of accidents in the workplace (Xiang 2000, Stallones et al. 2003). The GDHS reports that the extent of alcohol consumption is of increasing concern in Ghana, although it shows little variation according to the level of education, wealth categories, and urban–rural residence. The figure found in this survey was 38% for men and 10% for women. However, the actual consumption of alcoholic beverages while on the cocoa farm was limited to 8% of the male respondents. A local doctor tells how farmers who come in with cuts are sometimes under the influence of alcohol. A farmer in a FGD said, “If we see somebody say he can weed and drink, it is a liar. It is not possible”, but another responded, “Some drink and are able to work, others don’t drink but they can’t work; what is the problem?! It is good to know your limit”.

Photo 9 - A bottle of 'schnapps'.



Some vulnerable groups in cocoa communities were considered and it was found that most women continued working when pregnant, but performed lighter work in the second half of the pregnancy. One of the OSH experts mentioned how the mothers-in-law, reflecting on their own past experience, may expect the daughters-in-law to also continue to work up to the last day. The data seem to support this hypothesis as (older) female farmers seem to be less inclined to spare pregnant women than their male family members would be. Women cocoa farmers reported three times more often than men that working was “no problem” in the second half of pregnancy, and were three times less inclined to report that pregnant women “should not do farming”.

Elderly cocoa farmers generally don’t retire; they continue as long as their health permits it and slow down only if they can. If there are children to take over, they may force the elderly cocoa farmer to stop. Farmers who find themselves without children to look after them may feel they have no choice but to continue farming until a very old age; “There is no pension for cocoa farmers”. Nearly half of cocoa farmers over 60 years of age continue to carry loads, with 7% reporting heavy loads.

Photo 10 - Children of all ages help with chores

From the FGDs it seems that cocoa farming communities have become more aware of what child labor is. Participants, without being asked, were quick to deny that any of the worst kinds of child labor were present in their communities. This doesn’t mean that child labor is no longer an issue; it merely means it was very much recognized as an issue. Both experts and cocoa farmers stressed that the label “child labor” should not be applied to just any kind of labor a minor would perform on a cocoa farm. When a number of OSH conditions are met and minors attend school normally, adolescents in particular should be allowed the opportunity to



learn the (cocoa) farming trade from their fathers and/or mothers. That said; the survey showed that there are still legitimate concerns about the safety and health of adolescents and especially about smaller percentages of younger children. Secondly, it is clear there is no general agreement within the cocoa communities on what indeed is an acceptable minimum age for adolescents to perform certain tasks.

According to Xiang (2000), in a number of studies psychological stress has been shown to have a significant influence on the incidence of occupational injury and illness in farming. Most cocoa farmers reported that their health suffers from psychological stress, though this is mainly seasonal. The perceived effects, sleeplessness, concentration problems, and lack of energy, could easily translate to increased levels of illness and injury. This will be the object of further analysis.

In the FGD a number of participants, both male and female, mentioned that stress increases the risk of cutting yourself, accidentally, cutting your crops, or failing to notice hazards, such as snakes. Or as one woman put it, “You can find yourself with food in your left hand and at the same time weeding. All this pressure is there because there is no help. There is no money to find labor so even old people have a lot of work”. Participants in FGD mentioned farmers collapsing, and that some even took their own lives. Medical doctors confirmed that suicides and attempted suicides are reported, generally through the ingestion of pesticides, and suicide is not a total taboo. In the survey, one in ten respondents reported having personally known a fatality, though this may have been over-reported because respondents were reporting the same cases.

As it was clear from the expert interviews and the FGD, there are very few community-wide rules or norms about how to reduce OSH risks. The only real rule that exists all over is the “taboo day”, i.e., the one day in the week (Tuesday usually) during which farming is not allowed and people are expected to rest or work only within the community. These days may be a traditional method of allowing the body enough time to recover (though a village chief in Western Region only hinted at it). Festivals and death announcements can also force people to stay away from the cocoa farm. Sunday (or Friday for Muslims) is also widely observed as a day of rest. Vulnerable groups are generally not protected by any community rules or clear norms; those issues are decided within the households and families.

### 5.3 PAIN

Pain is a difficult and quite subjective concept to research. The survey results, however, clearly showed how different cocoa farm activities are associated with different incidences of symptoms of pain in very different parts of the body. Weeding and clearing especially scored high on pain in several body parts. In fact, many of the physical activities that cocoa farmers do on the cocoa farm produced symptoms of pain among more than 50% of respondents.

Much pain, especially lower back pain, seems to be linked to the poor lifting technique that was found in 3 out of 4 respondents. Long distance walking while carrying a load is a second culprit. Preliminary data from a forthcoming impact study show that training – in this case, the STCP’s OSH cocoa farmer training – can easily improve issues such as improper lifting techniques. The respondents, on average, spend half an hour travelling to their farms and 25% spend much longer. Four out of five farmers appear to suffer from repetitive strain injuries caused by overusing their muscles for extended periods of time; mainly the hands and legs are affected. Only a minority of farmers effectively counter this

Photo 11 - Cocoa farmers should regularly observe enough rest.





with appropriate techniques, such as taking rests well before the pain sensation manifests itself, and/or by a regular change of tasks.

The cocoa farmer's all-purpose tool, the cutlass, a blunt force tool, produced pain among almost all of the respondents, closely followed by the harvesting hook. In some cases, tools adapted for size and weight may be part of the solution, though about half of the respondents did not know about their existence. It also became clear that the lack of availability of adapted tools can be a problem, even though it needs to be noted that simply improving supply may not automatically lead to more adoption.

## 5.4 ILLNESS

Illness is a subjective concept just as much as pain. The actual causes of illness can be difficult to ascertain. However, in this survey, a majority of farmers are of the opinion that they experience substantial discomfort (dizziness, stomach problems, cramps, respiratory problems, etc.) and a number of chronic health problems (respiratory problems/asthma, joint/muscle inflammation, and rheumatism) as a direct result of cocoa farming. Over the year it may cause them to "stay home from work" for a couple of days or longer. More in-depth and medical research could substantiate these claims, provide more clarity about the causes, and cover more illnesses and discomforts.

Not going to the farm is generally an indication that the situation is serious; many farmers continue to work even when they feel ill. The cocoa cropping season creates periods in the year in which much work needs to be done in a short time. Paid replacement labor may also be difficult to find.

The inclusion of impotence as an illness showed that the perceived causes and actual causes may not always be in complete sync.

Spirituality and the possibility of being cursed by someone are very much present within cocoa communities and part of everyday life. Spirits and curses can cause health problems that may not be resolved by modern medicine but only by spiritualists and herbal doctors. It is important to make a clear distinction between "the spiritual" which is more secretive and has to do with the supernatural and the ancestors, and "curses" which are caused by humans, for example, as the result of jealousy or a conflict over land. A traditional healer is adamant that spirits and curses can make you fall sick or lose strength, but they cannot cause you to break bones. That would be an accident. Local doctors warn that the significance of these issues within the lives of (cocoa) farmers should not be underestimated. Although spirits and curses certainly are not a major OSH risk, the perceived risk of being affected by such problems is a genuine stress factor among many cocoa farmers and has to be taken into account.

As an exercise, the participants in the FGDs were told about a Japanese doctor who, in 1943, had described a set of medical conditions<sup>13</sup> that were so common among farmers that he decided to call it a syndrome, called "farmers' disease" (Lee and Lim 2008). It is not the intention of the author to propose the use of such a syndrome in the medical world. However, in reaction to sketching the farmers' syndrome, participants pointed to the fact that some farmers indeed are stronger than others and that not all lands are of the same quality. They also noted that the upbringing and attitude of a farmer can differ quite a lot. On the other hand, the discussions showed clearly that participants agreed that if you go into cocoa farming you can expect that your

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<sup>13</sup> The aetiologies include stress and accumulated external factors, including physical fatigue, mental tension, nutritional deficiency, infection, parasites, and cold injury, and these can all result in rheumatism, hypertension, nephrosclerosis, and myocardial damage. Peasant syndrome has eight symptoms, including shoulder stiffness, lumbago, paresthesia of the hand or foot, nocturia, breathlessness, sleeplessness, dizziness, and abdominal discomfort (Lee and Lim 2008).

health will suffer as a result of a number of issues, and that this is almost inevitable. The interviewed doctors also agreed that the strain of accumulated factors on a cocoa farmer's body can be quite high. One expert was struck by the high number of cocoa workers in the Ashanti region who died only a short while after returning home from working intensely on cocoa farms for a couple of years – before handing the farm over to "caretakers". This phenomenon (usually attributed to witchcraft), according to him, could well be the effect of these accumulated factors. At any rate, no concept exists of anything like a "cocoa farmers' syndrome" within cocoa communities.

## 5.5 INJURY

Half of the respondents had injured themselves in such a way in the last 2 years that they needed treatment. This happened mainly during weeding (46%), with an average incidence of 1.75 times. Worst injuries were mainly in the extremities and 30% of the worst injuries had to be treated at a hospital. In 40%, big scars were left, which for (non-married) women can have a negative effect on their chances of making a good marriage. About 70% reported they had had a serious injury in their adult life, mainly while weeding and mainly to the extremities. The figures also unambiguously demonstrated that most "worst injuries" were from the use of sharp farm tools. About 40% of the injuries had to be treated at a hospital and 3% resulted in permanent damage. These are rather high incidences, especially for cuts (0.8/year) that may be reduced dramatically with proper training and the use of the correct PPE and/or the (careful) use of alternative technologies, such as herbicides and motorized brush cutters.

More than 50% of cocoa farmers reported that they had cut themselves with a sharp tool over the last 2 years. However, it turns out that the chainsaw is rarely used by cocoa farmers themselves – if used on a cocoa farm at all. Cocoa farmers therefore may not have been involved in a number of horror stories from a doctor with experience of chainsaw-related injuries presenting at regional hospitals. The incidence of alcohol and especially of medication use during the use of sharp tools is low, but shows some room for improvement.

Accidents with ladders do happen, with half of the cocoa farmers using ladders. Many of these accidents seem to be preventable through training.

Bites and stings are common in the farm environment, although cocoa farmers somewhat over-rate the dangers from snakes and scorpions. One of the doctors reports that, fortunately, most snakes are only mildly venomous. The local doctors are also of the opinion that farmers know what to do in case of a snake bite. However, only regional hospitals may have the antivenin in stock. Bites are an example of how occupational injuries can be under-reported in the statistics. It turns out that, because of the way the registrations system works, doctors and hospitals often do not administrate work-related bites as occupational injuries, but as ulcers or domestic injuries.

Injuries to the eye are frequent, though they seldom create acute and permanent damage. A substantial group of cocoa farmers who do their own spraying report eye problems caused by farm chemicals. Local doctors stress that most eye problems are caused by chronic diseases, in particular hypertension and diabetes, and by aging. Further research is needed to confirm the perceived eye problems caused by farm chemicals. The survey also clearly shows farmers are injured by falling objects (40% of farmers) and skin problems affect about 30%.

A number of participants in the FGD expressed their fear of bush fires caused by smoking, cooking, and hunting. One participant reported how he had lost

Photo 12 - Local ladder  
(© IITA/STCP)



his uncle to the great bush fires in 1983, which destroyed tens of thousands of hectares of cocoa farms in Ghana.

Some farmers slip and fall more often than others but, on average, about one-quarter of farmers had experienced a painful fall related to cocoa work in the last 2 years. Unexpectedly, no relationship with age was found, which is contrary to the report of local doctors. This may be due to the fact that falls of this kind might more easily produce injuries among the elderly, which makes them look for medical treatment more often. OSH experts and FGD participants both point to the fact that many of these injuries happen during wet conditions and while carrying a load. Another risk factor for falls that one doctor pointed out was the long, obstructive skirts on the dresses that many women wear, while men wear trousers or overalls. Actual injury from lifting and/or carrying has a mean incidence of 0.22 times in 2 years and mainly affects the back and lower back.

How people respond to a farm emergency can determine the extent of the injury or even whether the injured person lives or dies (Tettey et al. 2010). This topic was not part of the survey because it requires too much technical knowledge on the part of the enumerators, but both the experts and doctors strongly indicated that farmers may struggle to recognize the nature of the emergency in time. The traditional healer assured the author that nowadays they only do limited first aid and people go to hospitals sooner than they used to do in emergencies. The local doctors agreed to a certain extent and acknowledged that some of the techniques farmers and healers use for first aid are effective, for example in the case of burns, lacerations, and snake bites. However, blood loss is often greater than it needs to be, wounds are regularly contaminated through the use of certain herbal remedies, and farmers subsequently come in only after the wound has become badly infected.

## 5.6 AGROCHEMICALS

Almost all respondents (98%) used pesticides and three out of four used fertilizers on their cocoa farms. Partly responsible for this is the Ghana COCOBOD. Its “high-tech” extension program stands out in comparison with other African cocoa-producing countries. This results in a relatively higher usage of farm chemicals, in particular with respect to mineral fertilizers. In comparison with other agricultural sectors in Ghana’s rural areas, the use of farm chemicals is much higher on cocoa farms (Hainmueller et al., 2011),<sup>14</sup> though it is clear that for optimal productivity the cocoa sector will need to intensify the use of certain inputs, in particular, fertilizers. It is expected that increased intensification of cocoa farms in future will lead to an increased use of farm chemicals.

The OSH risks associated with the use of farm chemicals apply not only apply to the cocoa farmers who do their own spraying; more than half of the respondents reported that other people are present without protection. Many participants in the FGD mentioned that they let others spray because of the discomfort some products cause, especially when not all the PPE is used. It became clear that cocoa farmers, in general, remain present on the farm while the Government’s mass spraying gangs are doing their work. By doing so, they can monitor the quality of the work performed. Many of the farmers wear little PPE at that time. Male and female cocoa farmers may help by fetching water and filling and lifting the knapsack onto the sprayer’s back. Women generally prepare and serve food for the sprayers, though not always on the farm. Very often this means they are directly exposed to the applied farm chemicals. Several FGD participants reported direct effects on their health. Another specific OSH risk that was mentioned on a couple of occasions was that the motorized

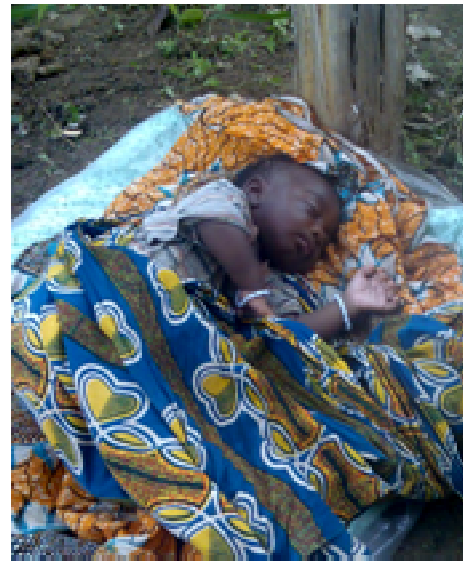
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<sup>14</sup> Application of fertilizer was reported by only 21% and pesticides by 37%. Fertilizer use is lowest (9%) in the Eastern Region. It must be noted that pesticide usage is highest in vegetable farming.

knapsack sprayers sometimes catch fire, with one cocoa farmer reporting that he very narrowly escaped being burned in that way.

When used incorrectly, some farm chemicals can potentially cause disturbing long-term health effects, including those that carry on to future generations, such as fertility problems and/or birth defects. However, experts warn that no attempt should be made to assess such chronic effects through a survey by enumerators with no medical (or toxicological) background or training whatsoever. However, from the interviews with OSH experts and doctors it became clear that irresponsible use of pesticides in Ghanaian agriculture may already be causing fertility problems (especially suspected among vegetable farmers) and should be held responsible for an unknown percentage of cancers. Further research and proper administration at the level of hospitals (local, regional, and national) could provide a better understanding of what is possibly going on.

Photo 13 - Baby sleeping on a farm.  
(© IITA/STCP)



The list of reported active ingredients is reason for concern, especially since we know many farmers are not protecting themselves adequately. The list shows DDT (which is banned but still available illegally) and a number of pesticides that are acutely toxic such as imidacloprid, lambda-cyhalothrin, and paraquat, especially when the proper PPE isn't used. Out of concern for workers, diazinon is banned in the EU, as is atrazine for reasons of groundwater pollution. Further research and multivariable analysis will focus on attempts to link the perceived health effects mentioned above to the active ingredients that are actually used, and to the non-use of PPE, at the level of the individual farmer.

The data about respondents who conduct their own spraying (53%) show that many more farmers depend on information received from the agricultural input dealer than on the information on the label, thus stressing the important role of the local agro-input dealers in reducing OSH risks on cocoa farms. Some farmers also point to the fact that the label is in English and not in the local language. Mixing chemicals and putting them in the sprayer are generally the most dangerous tasks relating to fungicides and insecticides (Tettey et al. 2010). Disturbingly high numbers of farmers who do their own spraying (6 out of 10) touch farm chemicals with their bare hands. As some chemicals easily penetrate the skin, this is a matter of some concern.

Photo 14 - The sign post of a dealer in agro-chemicals.



Some alarming techniques for assessing the potency of farm chemicals were reported, such as inhaling (10%) and dipping in the hand (1%). A chilling remark that was made by several experts is that some farmers actually taste the chemical solution before application to assess the potency. This survey, however, depended mostly on open questions, and not one respondent mentioned "tasting" as a technique. We may therefore be dealing with a "rural legend" or an example of socially acceptable answering by the respondents (which would mean that cocoa farmers already know very well this is not advised). At any rate, the incidence of this tasting of farm chemicals is expected to be rather low, if not close to zero. Blowing through the nozzle when it is blocked is unfortunately not a legend; around one-quarter reported doing it. This can clearly cause farm chemicals to end up in the mouth, which is a big health concern. Making better information available to farmers through agro-input dealers and/or OSH training should lead to better practices.

More than half of cocoa farmers who do their own spraying reported having experienced between 1 and 5 direct health effects caused by farm chemicals, mainly irritation and forms of intoxication. Bystanders reported less important effects, but were not protected by PPE in 85% of the cases, and this is alarming. Poisonings can be difficult to recognize, especially the lighter states. One-third of the respondents who do their own spraying reported having experienced sudden illness during or directly after working with farm chemicals. On average, cocoa farmers reported they knew at least one person (1.23) to whom this had happened. The great majority (86%) did not report knowledge of a single case of a cocoa farmer dying after having worked with farm chemicals.

In the FGD, farmers mentioned that there are cocoa farmers who faint or collapse from intoxication during farm chemical application. Different are the cases of people who deliberately ingest pesticides to commit suicide, which apparently is one of the preferred methods. Several cocoa farmers in FGDs have mentioned suicide, showing that there is not a massive taboo on suicide per se (which otherwise could lead to an over-reporting of suicide by pesticides as work-related incidents). The experts and doctors, however, stressed that hospitals do not see many severely poisoned cocoa farmers, unless from deliberate intake. Further research could create more clarity. In general, when asked what they would do, cocoa farmers report that they would take a poisoned farmer to the hospital. Other reported remedies include letting the farmer eat/drink palm oil or papaya. The efficacy of these local remedies is not confirmed by the doctors the author has spoken with and should therefore be the object of further study. Only one out of 420 respondents would read the label, which again shows the need to educate farmers more about the hazards and precautions surrounding farm chemical use..

A number of risky behaviors were recorded; eating during application (2.7%); not washing at all after application before eating or drinking (1.4%) and washing only the hands after application before eating (41.9%). It is important to note here that an OSH expert mentions that women are also exposed to chemical hazards when they wash the husband's clothes afterwards. None were found to drink or smoke during application. A small percentage of bystanders eat and/or prepare food on the farm during spraying. In 5% of cases it is reported that pregnant women are or can be present during spraying. Also children are present during application (11.2%) or can be present (6.4%). This again is a clear sign that farmers' education and complete information at the sales points are necessary to make farmers more aware about the risks to their families.

The reuse of containers is a relatively small problem although, for example, one lady in one of the FDG was known within the community to collect empty containers and use them for the sale of homemade soap. With regard to the storage of farm chemicals, most store them in acceptable places such as store rooms, keep them hidden on the farm, or even in a separate shed. Unfortunately, 31% report that they store them either in the bedroom or under the bed. Several farmers made a point out of explaining clearly to the author how children are instructed about the dangers of touching farm chemicals and how parents go out of their way to keep farm chemicals away from (naughty) children. In this survey no off-farm accidents (let alone with children) were reported.

The re-entry time is the minimum amount of time that must pass between the time when a pesticide was applied to the cocoa farm and the time when the farmer can go back into the farm without wearing PPE. Re-entry times can vary much between different products and may even depend on external factors such as the weather. As 10% return directly or after only a couple of hours, there is room for improvement. No more than one-quarter return after only a semi-safe re-entry time of 3–4 days for most products and 11% return only after 5 days or more, which is deemed safe for almost all products according to the OSH experts.



## 5.7 PERSONAL PROTECTIVE EQUIPMENT

Cocoa farmers work in a hostile natural environment and are therefore advised to always wear certain items of PPE. Other additional items are advised only for specific activities. Looking at personal protective equipment it becomes clear from the data that most farmers know very well how they need to protect themselves during general farm work. The general items of PPE that farmers most often report they lack are wellington boots (40%) and the overalls (27%). On average, farmers feel they lack 1.4 items of PPE.

On average, respondents could mention 6 out of the 8 items of PPE recommended for the application of pesticides. The surveyed cocoa farmers in general are using about half of the recommended 8 items. By approximation, however, they think that they lack about 2 of these items. Only 0.5% of respondents reported that they knew about all 8 recommended items (0% used all 8) although 28% mentioned 7 items (and 5% used 7). Respondents reported that they knew 4 out of the 5 items of PPE recommended for use when broadcasting fertilizers and used 3 items on average. During clearing, 64.7% of farmers use all 3 recommended items.

Photo 15 - Damaged PPE



From the FGD it becomes clear that many farmers (would) struggle to afford, acquire, and maintain all necessary PPE. Some claim to have to travel as far as Kumasi from the Western Region. A number of complaints about comfort were also mentioned. For example, some of the clothing is quite heavy and hot to wear. Often PPE are not the right size and leave marks on the skin. Also, continuously wearing wellington boots, especially in moist circumstances, can cause skin problems. The definition of PPE can be quite a challenge, something that was also reported by the enumerators. In one FGD, a lively discussion divided the participants on whether a cutlass is PPE or not. One of the doctors believes that “the problem” with the Ghanaian (cocoa) farmers is that they may not adopt PPE before “you put enough fear into them”, a remark that illustrates once again the challenges of technology adoption in agriculture.

## 5.8 LOSSES

This baseline survey shows several possibilities for the rapid reduction of several significant OSH hazards. Interventions that would reduce losses due to OSH issues could include initiatives such as technical training for farmers, better and adapted provision of information by input dealers, and support to improved markets and better distribution of PPE. The median cocoa farmer in this survey is estimated to make 1.62 work-related visits to the doctor/year and claims to lose about 25 days of work on the farm as a result of pain, illness, or injury related to cocoa farm work. Though a preliminary median yearly loss to OSH issues is estimated at about US\$110, very often the cost is not only monetary; much of the labor input comes from family labor. The losses are as well somewhat offset by an expert’s explanation: “OSH issues have more impact on the well-being than on the ‘well-fare’. The farmer will kill himself to work on the farm, so the production is the last to suffer. The effects will be on him.” There are also a number of added effects, such as missing important events on the cropping calendar, losing money on non-used materials, failing in the repayments of loans, and even actually losing property through emergency sales. Caretakers are also known to lose their jobs.

Future research will have to determine the exact economic losses to farmers from OSH issues and to find out which interventions and strategies will show the most impact at a realistic cost for all actors along the cocoa value chain.



## 5.9 RECOMMENDATIONS

From the data and based on the above discussion, a number of recommendations can be made:

- The Ghana Health Services should look into ways to improve the registration of OSH issues within medical facilities, in order to get a better understanding of the scope of the problem and appropriate measures to improve OSH for workers in all occupations, not only cocoa farming.
- It becomes clear from this survey that knowledge levels among cocoa farmers about OSH leave much to be desired. Training cocoa farmers on OSH is expected to prevent important losses of productive capacity. An upcoming impact study may provide more clarity but preliminary results already show a clear impact on both knowledge and behavior.
- The cocoa farmer's household is a cornerstone unit within the cocoa community, and probably should be the main focus of any intervention that targets cocoa farmers, though not exclusively. Cocoa farmers show little professional organization and farmers organizations have little reach among them. Therefore, the best classic way to reach 99% of cocoa farmers directly is through the radio. Face-to-face training or innovative ICT approaches may provide alternative pathways for the delivery of more complex messages.
- The study suggests that relatively simple training and information packages at the level of cocoa farmers (and possibly also that of agro-dealers or other actors such as cocoa purchasing clerks) could lead to important gains in cocoa farmers' health and safety and in their productive capacity, which also translates to a positive impact on income.
- The majority of cocoa farmers need to be educated about simple ergonomic techniques, such as proper lifting techniques and the importance of regularly changing tasks and/or taking short rests, to prevent loss of productive capacity.
- On top of ongoing anti-child labor programs, efforts should be made to get (cocoa) farming communities to discuss and communally decide on the appropriate community policy about what is acceptable and safe work for all major vulnerable groups, pregnant women, the youth, and the elderly.
- Both training and improved provision of information by professionally trained agro-dealers could work towards significant improvements in the practices with regard to agrochemical use among cocoa farmers, for example during mixing where they work with undiluted chemicals.
- Awareness needs to be raised, among cocoa farmers about the need for proper protection against the hazards of agrochemicals, both for themselves and also for unprotected bystanders (who disturbingly often include children).
- This study shows that the employment of professional agrochemical sprayers should be advocated in cocoa communities. Cocoa farmers should not want to spray their farms themselves. Those who would still spray (or supervise the spraying) personally should be made fully aware that they need to understand exactly how to use the product and use all the right PPE.
- In order to prevent more injury, cocoa farmers' information levels with regard to PPE need to be raised through training.
- Interventions in cocoa growing communities, or improvements in the functioning of the markets, that can make PPE more easily available and more affordable, are much awaited to serve an important though to a large extent still dormant demand.
- Awareness among cocoa farmers about the proper responses in emergency situations on-farm – including poisonings – needs to be raised to ensure a bad incident doesn't turn into an emergency or even a life-threatening situation.
- Public and private actors that are providing extension messages to cocoa farmers should also include messages on the prevention of the hazards of using medical drugs and alcohol, and (to a lesser extent) of smoking during (cocoa) farm work.
- The use of mobile phone real-time data collection tools in surveys of this kind is economical, gives more freedom in the research design, and is an acceptable technology in the eyes of the cocoa farmer.

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**ANNEXES**

**A FGD PREPARATORY DOCUMENT**

# FGD on OSH

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## **THE MODERATOR FOR THESE FOCUS GROUP DISCUSSIONS NEEDS TO HAVE STUDIED THE OSH TRAINING MANUAL!!**

### General instructions for the FGD

A Focus Group Discussion is not a tool to collect information, but a tool to let people discuss among themselves.

A FGD complements a survey, but is not part of it. This means that none of the information that the participants share with us is used for any statistics. Generally FGD are used to find out *why* people feel as they do about something or the steps that people go through in making decisions. They provide information about content and process, not so much about personal characteristics. The groups should be between 6-9 persons (in my opinion), and ideally be led by a skilled moderator speaking the local language. The moderator's role is to make sure all participants contribute. He/she knows how to get people to open up and how to keep them opened up.

In a sense a moderator needs the combined skills of a survey researcher, a social scientist and a therapist. He/she has to watch out for people who want to show off and close them down without coming on too strongly. The moderator has to watch out for shy people and draw them out, without being intimidating.

The moderator has to turn to session into a supportive, non-judgemental group and tell people there are no right or wrong answers. Everyone in the group is equal (ideally).

#### The moderator's main tasks:

- Setting the scene, explaining the purpose of the focus group discussion;
- Introducing participants to the topics for discussion;
- Keeping the group on time and focussed on the topics;
- Encouraging participation from all the group members;
- Summarising discussions from time to time to check appropriate understanding of participants' comments.
- Ensuring that all the key issues are addressed

The FGD should take about 2 hours. After the session the moderator should write down a number of key observations per topic and – in this case - discuss them with the OSH specialist and the survey coordinator and his translator, who have been taking notes.

#### **CRITERIA FOR PARTICIPATION:**

##### **One group of men and one group of women**

- All have to personally work on (a) cocoa farm(s)
- Different ages, but at least 18 and over
- No chiefs or leaders
- No health professionals
- Not too much difference in farm sizes
- Participants should be comfortable with each other, so prevent any intimidating factors
- It would be best not to only have a group of close good friends



## USE THIS SECTION TO PREPARE YOURSELF

### Description of discussion topics

*This section serves only as a description of the kind of information we are looking for during the FGD. The moderator should to use this document to prepare him/herself for the discussion. It is not an interview guide or a questionnaire! Try not to need these descriptions during the FGD. Prepare yourself adequately before it starts.*

*Use the shorter guide (that follows after this section) during the FGD itself. Not all questions in the description below have to be addressed. If a topic doesn't get a good response, don't try too long before skipping to the next.*

#### 1. Identification of OSH risks and issues in cocoa farming;

Open the FGD with a discussion on; 'is farming is dangerous or risky?'

We want to find out which risks and dangers the farmers themselves identify and perceive as a problem.

#### USE QUESTIONS LIKE”:

What is it about farming that is dangerous? Why is farming dangerous? What makes farming dangerous? What causes injury? What happened?

#### USE BELOW TOPICS IF NEEDED TO RESTART THE DISCUSSION

(IN RED: THIS TOPIC ALSO FOLLOWS LATER!):

- FARMING TOOLS
- SHARP TOOLS
- LADDERS
- CARRYING AND LIFTING LOADS
- REPETITIVE WORK
- POOR POSTURE
- AGROCHEMICALS (MIXING, APPLICATION, CLEANING UP, STORAGE, DISPOSAL, READING THE LABEL, RE-ENTRY)
- PERSONAL PROTECTIVE EQUIPMENT
- FARM ENVIRONMENT (TEMPERATURE, WATER, INSECTS, ANIMALS, SHARP/FALLING BRANCHES, FIRE)

What is the difference between safety problems and health problems? (We expect this may a difficult distinction to make)

How do we improve safety on the farm?

How do we improve health on the farm?

#### 2. Received training;

We need to know who has received what kind of training on safety and or health in farming. We want to look at all kinds of training to improve knowledge about safe and healthy farming, both local/ traditional/ family training and external and/ or formal training. This should not take long.

The topic only serves to understand the group better, and to improve the discussion.

#### 3. Risks of agrochemical use;

Ask the participants to describe which products they use (pesticides, herbicides, fungicides and fertilizers); but not because STCP wants to collect the data (because we don't!). Let them have a discussion on those products and what the risks are. What can these do to you health? What goes wrong with them? What kind of injury, discomfort or illness can they get from pesticides? What are the immediate and longer term results of exposure?

How and where do they store pesticides stored? What is the best place and why? (How often) do we see accidents happen?

Who applies the pesticides? Themselves or do they contract someone to do it? Why?  
Who is present during application? How do they protect themselves? What kinds of accidents happen?

Do they read the label? Can they understand everything? Do they understand the symbols on the package? What kind of information do they get from the label?

We want to have a discussion on how an accident with pesticides can be very serious. Do they know about people who died or have permanent damage from an accident with pesticides?

Is it possible that some people in Ghana deliberately use pesticides to hurt themselves? Why would anyone do that? Do they know about anyone who actually killed him/herself with pesticides?

#### **4. Risk behaviours in agriculture;**

Let the farmers have a discussion on the use of alcohol while farming. Are there risks for your health/safety?

Have a discussion on preparing food and eating and drinking on the farm. Are there risks for your health/safety?

Have a discussion about smoking. Are there risks for your health/safety?

Have a discussion about smoking, eating and/or drinking during the application of pesticides. Does it happen? Is it dangerous or not?

#### **5. The influence of stress and pressure on safety and health in farming.**

Are farmers feeling pressure because of farming, or are they worry-free? What about farming is putting most time pressure on the farmers? What other worries can farmers have that makes some of them think about it all the time?

If a farmer has many worries in his/her life and thinks about it all the time, what does that do to his/her health? Does it increase injury?

If a farmer has much stress/worries/pressure in his work or has to work very fast, will he/she get injured more easily? Does that happen? What happens?

#### **6. Existing community discussions, rules and regulations on OSH;**

We want to find out whether the community has any rules, regulations or norms that helps to protect farmers in their work. Does the community have any rules for farmers on safety and health on the farm? How does the community protect the farmers in their work? Are any people forced to rest sometimes?

Have a second exchange on whether people within their families or within the community have any rules, regulations or norms that helps to protect vulnerable groups:

- CHILDREN?
- ELDERLY?
- PREGNANT WOMEN?
- DISABLED?
- ???

Are there any tasks any the above groups cannot do? Are there jobs that are exclusive to only men, only women, only young, only healthy farmers... other groups?

#### **7. Personal Protective Equipment;**

Start an exchange on which PPE they know and use?

Which do they think they really need? Can you get them? Where?

Which problems do they have with the use of PPE? Is it difficult to use them properly?

#### **8. Discussion on household use and spending on medical treatment / traditional medicine;**

If a farmer has pain from working on the farm, what can be done?

If a farmer has a smaller injury or moderate illness, where do they go for treatment?

If a farmer has a serious injury or serious illness where do they go for treatment?

Why is this? What are the constraints?

Which treatments do they prefer?

### 9. *Perceived losses from safety and health problems in cocoa farming;*

Have a discussion about what everybody thinks safety and health problems due to farming they have had and what it 'cost'. What do we 'lose' because of these problems?

What is the nature of the 'loss' of 'cost' farmers incur? (time, labour force, production, money, etc.)

Ask the participants about their experiences. What does transport and treatment cost them each year?

| USE: WHAT, WHY, WHO, HOW, WHERE, WHEN?

Detail what happened in a couple of farmers lives over the last 1-2 years and calculate their 'loss'.

This calculation does not have to be exact, or take very long, just use it to illustrate.

| HOW MUCH DOES IT 'COST' TO LOSE A DAY OF LABOUR, IN GHS? (IF NO GOOD ANSWER: USE 4 GHS)

What are the reactions? How do they feel about this?

### 10. *The case of 'farmers disease' in Asia;*

Present the following case:

SEVENTY YEAR AGO A DOCTOR IN JAPAN DECIDED TO LOOK AT FARMER'S HEALTH. HE FOUND THAT MANY FARMERS SUFFER FROM A NUMBER OF DIFFERENT PROBLEMS, OFTEN AT THE SAME TIME. SOME FARMERS EVEN BECOME SO TIRED AND SICK FROM ALL THE SMALLER PROBLEMS THAT THEY ARE UNABLE TO PERFORM THEIR WORK. THOSE TIRED FARMERS FEEL A LOT OF PRESSURE ON THEM AND OFTEN DON'T EAT WELL ENOUGH. MAYBE THEY ARE ALSO WEAKENED FROM HAVING PARASITES AND FROM WORKING IN DIFFICULT CIRCUMSTANCES.

THE DOCTOR PROPOSED THAT IF A FARMER HAS MANY PROBLEMS AT THE SAME TIME WE SHOULD CALL THIS 'FARMERS' DISEASE'.

SOME OF THE PROBLEMS FARMERS WITH 'FARMERS' DISEASE' SUFFER FROM ARE:

- STIFF SHOULDER MUSCLES
- LOWER BACK PAIN
- TINGLING OR NUMBNESS OF THE HANDS OR FEET
- GOING TO THE TOILET OFTEN AT NIGHT
- BREATHLESSNESS
- SLEEPLESSNESS,
- DIZZINESS
- STOMACH PROBLEMS

What do you think about this doctor and his 'farmers' disease'?

Can this exist in Ghana?

Why do some farmer get many small problems? Do they know about any farmers that have so many smaller problems that it prevents them from performing?

Are some farmers just not as strong as other farmers? Are some just lazy or not serious?

Does it happen that many farmers do the same work, but some farmers just can't perform as well as the others? Even if they are the same age and have the same kind of body?

## USE THIS SHORTENED 'GUIDE' AS AN AID DURING THE FGD

### **1. The risks of farming – 15 minutes**

- Participants exchange on 'is farming dangerous or risky?'
- Participants discuss the difference between 'health problems of farming' and 'safety problems of farming'.
- Participants exchange on the causes of injury and illness from farming.
- Participants try to identify how safety can be improved & how health can be improved.

### **2. Received training – 2 minutes**

- Find out about any previous training on these kinds of issues and where they got it.

### **3. Risks of insecticides, herbicides, fungicides and fertilizers – 15 minutes**

- Participants exchange on the perceived risks with pesticides and fertilizers
- Participants exchange experiences with such risks, accidents and the resulting discomfort, injury or illness.
- Participants exchange on the storage of pesticides and their experiences.
- Participants exchange on how pesticides are applied and the risks it involves.
- Participants exchange on the information the can/can't get off the package label
- Experiences with serious accidents with pesticides and deliberate ingestion

### **4. {RISK BEHAVIOIR} Alcohol, smoking, preparing food – 10 minutes**

- Participants exchange on health and safety risks of alcohol & farming.
- ..on health and safety risks of preparing food and eating and drinking on the farm.
- ..on health and safety risks of smoking on the farm.
- Have a discussion about smoking, eating and/or drinking during the application of pesticides. Does it happen? Is it dangerous or not?

### **5. {RISK BEHAVIOUR} Mental stress, tensions and worries – 10 minutes**

- Participants have a discussion on whether farmers feel much pressure/are worry-free.
- Participants identify what causes the most time pressure/worry/stress in their lives.
- Participants identify what causes the most time pressure/worry/stress in farming.
- Participants exchange on what this pressure/worry/stress does to their health.
- Participants exchange on how/whether pressure/worry/stress increases injury.

## 6. Community rules & vulnerable groups – 10 minutes

- Identification of any family, or community rules, regulations or norms that protect farmers in their work.
- Participants exchange on the existence of/need for family, or community rules, regulations or norms that protect children, elderly, pregnant women and the disabled in their work.
- Identification of tasks which are not suitable for everyone/vulnerable farmers.

## 7. Personal Protective Equipment – 15 minutes

- Identification of PPE and use of PPE and exchange on which are most important, why and how to acquire them
- Participants exchange on the problem and inconveniences in the use and proper use of PPE

## 8. {CONSEQUENCES} Use of medical treatment/traditional medicine – 15 minutes

- Participants exchange on what can be done about pain after working on the farm
- Participants exchange on what they do about smaller injury or moderate illness
- Participants exchange on what they do about a serious injury or serious illness
- Participants discuss the challenges of getting treatment and which they prefer

## 9. {CONSEQUENCES} Perceived losses/expenditure – 15 minutes

- Participants identify what they lose because of work related safety and health problems.
- Participants identify what the nature of the losses are and the consequences
- Participants share experiences, give examples
- The moderator tries to quantify those examples in monetary terms and asks the participants to respond.

## 10. {OPTIONAL} The case of 'farmers disease' – 15 minutes

- Moderator presents the case and waits for the participants to respond on it
- Discussion on farmers having many smaller health issues at the same time
- Discussion on whether there are strong- and weak-bodied farmers, or just motivated and lazy farmers





# OSH baseline and impact survey DEF

Last Modified by: Sander Muilerman on 13 Sep 2011 19:27:25 Revision number: 152 Field Count: 234

## Section 1. Intro

### 1.1 enumerator

[!] What is the name of the enumerator for this interview?

Expects a single option response (required)

- Godspower Adeshie [1]
- Gabriel Nakotey [2]
- Michael Akuamoah Boateng [3 ]
- Kennedy Owusu [4]
- Timothy Alhassan [5]
- Sander Muilerman [6]
- Other [7]

Prerequisites

Skip when *enumerator (1.1)* Not Equal 'Other [7]'

### 1.2 other enumerator

Who is the 'other enumerator', what is his or her full name?

Expects a single line text response (required)

### 1.3 base or impact

[!] Is this a baseline study community (non-trained farmers) or an impact study community (trained-farmers)?

Expects a single option response (required)

- Baseline study (non-trained) [1]
- Impact study (trained) [2]

### 1.4 region

[!] What is the name of this region?

Expects a single option response (required)

- Ashanti [Ashanti]
- Brong Ahafo [Brong Ahafo]
- Central [Central]
- Western [Western]

Branches

If response Equals 'Ashanti [Ashanti]' then skip to *Ashanti (1.5)*

If response Equals 'Brong Ahafo [Brong Ahafo]' then skip to *Brong Ahafo (1.6)*

If response Equals 'Central [Central]' then skip to *Central (1.7)*

If response Equals 'Western [Western]' then skip to *Western (1.8)*

## 1.5 Ashanti

[!] What is the name of the district?

Expects a single option response (required)

- Adansi South [Adansi South]
- Ahafo Ano North [Ahafo Ano North]
- Amansie Central [Amansie Central]
- Bekwai Municipal [Bekwai Municipal]
- other [other ]

Branches

If response Equals 'other [other ]' then skip to *other district (1.9)*

If response Equals 'Adansi South [Adansi South]' then skip to *community name (1.10)*

If response Equals 'Ahafo Ano North [Ahafo Ano North]' then skip to *community name (1.10)*

If response Equals 'Amansie Central [Amansie Central]' then skip to *community name (1.10)*

If response Equals 'Bekwai Municipal [Bekwai Municipal]' then skip to *community name (1.10)*

---

## 1.6 Brong Ahafo

[!] What is the name of the district?

Expects a single option response (required)

- Asunafo North [Asunafo North]
- Asutifi [Asutifi]
- other [other ]

Branches

If response Equals 'other [other ]' then skip to *other district (1.9)*

If response Equals 'Asunafo North [Asunafo North]' then skip to *community name (1.10)*

If response Equals 'Asutifi [Asutifi]' then skip to *community name (1.10)*

---

## 1.7 Central

[!] What is the name of the district?

Expects a single option response (required)

- Assin North [Assin North]
- other [other ]

Branches

If response Equals 'other [other ]' then skip to *other district (1.9)*

If response Not Equal 'other [other ]' then skip to *community name (1.10)*

---

## 1.8 Western

[!] What is the name of the district?

Expects a single option response (required)

- Bia [Bia]
- Sefwi Wiawso [Sefwi Wiawso]
- Wassa Amenfi East [Wassa Amenfi East]
- Wassa Amenfi West [Wassa Amenfi West ]
- other [other]

Branches

If response Equals 'other [other]' then skip to *other district (1.9)*

If response Not Equal 'other [other]' then skip to *community name (1.10)*

---

## 1.9 other district

[!] Which 'other district' are you in?

Expects a single line text response (required)

**1.10 community name**

[!] What is the name of the community?

Expects a single line text response (required)

**1.11 Intro1**

[!] Hello, my name is **enumerator (1.1)** and I am here on behalf of STCP (the Sustainable Tree Crops Programme). I am part of a team that is studying health and safety in cocoa farming. I hope that you will want to help me.

**1.12 Consent**

[!] The interview takes up to 90 minutes to complete and is about your life and work as a cocoa farmer. The information will not be shared with anyone else outside of the research team. Do you agree to take part in this study?

Expects a single option response (required)

yes [yes]

no [no]

Branches

If response Equals 'no [no]' then skip to *No consent 2 (10.2)*

**1.13 interpreter**

[!] Do you work with a local interpreter during this interview?

Expects a single option response (required)

no [no]

yes [yes]

**1.14 date**

[!] Please confirm the date of this interview

Expects a date response (required)

**1.15 time**

[!] Please confirm the time for this interview.

Expects a time response (required)

## Section 2. Respondent

### 2.1 name

What is the farmer's full name?

Expects a single line text response (required)

### 2.2 training

Have you ever had any training on safety and health in cocoa farming before? [READ]

Expects multiple selected options (required)

- yes, from STCP/IITA [1]
- yes, from other organisation [2]
- yes, but don't know which organisation [3]
- no [4]

Prerequisites

Skip when *training (2.2)* Not Equal 'yes, from other organisation [2]'

### 2.3 training other organisation

Which other organisation trained you on safety and health in cocoa farming?

Expects a single line text response (required)

Prerequisites

Skip when *base or impact (1.3)* Equals 'Impact study (trained) [2]'

Skip when *training (2.2)* Equals 'no [4]'

### 2.4 training check baseline

[!] Find out for sure: Was this farmer trained on OSH by STCP?

Expects a single option response (required)

- This farmer DID NOT receive OSH training from STCP [1]
- The farmer received the STCP OSH training [2]
- It is still unclear to me [3]

Prerequisites

Skip when *base or impact (1.3)* Equals 'Impact study (trained) [2]'

Skip when *training check baseline (2.4)* Equals 'This farmer DID NOT receive OSH training from STCP [1]'

Skip when *training (2.2)* Equals 'no [4]'

### 2.5 baseline but training

[!] Is the farmer sure that he/she received training on health and safety in cocoa farming from STCP/IITA?

Expects a single option response (required)

- The farmer is sure that he/she was trained on OSH by STCP [2]
- The farmer was not trained. It was a misunderstanding [1]

Branches

If response Equals 'The farmer is sure that he/she was trained on OSH by STCP [2]' then skip to *No baseline farmer (10.4)*

Prerequisites

Skip when *base or impact (1.3)* Equals 'Baseline study (non-trained) [1]'

Skip when *training (2.2)* Equals 'yes, from STCP/IITA [1]'

### 2.6 training check impact

[!] Find out whether this farmer was trained by STCP on Occupational Safety and Health.

Expects a single option response (required)

- Farmer was in the STCP OSH training [1]
- Farmer did not participate in the STCP OSH training [2]
- This still remains unclear [3]

Prerequisites

Skip when *base or impact (1.3)* Equals 'Baseline study (non-trained) [1]'

Skip when *training check impact (2.6)* Equals 'Farmer was in the STCP OSH training [1]'

Skip when *training (2.2)* Equals 'yes, from STCP/IITA [1]'

**2.7 impact but no training**

[!] Is the farmer sure that he/she did not receive training on health and safety in cocoa farming from STCP/IITA?

Expects a single option response (required)

- The farmer really DID NOT receive the STCP training on OSH [1]
- The farmer was trained. It was a misunderstanding [2]

Branches

If response Equals 'The farmer really DID NOT receive the STCP training on OSH [1]' then skip to *No impact farmer (10.3)*

---

**2.8 age**

What is your age? [If difficult; try to calculate the age together with the farmer]

Expects a numeric response (required)

**2.9 picture**

[!] Please take a picture of the farmer, by choosing 'Options' and then 'Take Photo'. If he/she does not agree, choose 'Next'.

Expects an image response (optional)

---

**2.10 sex**

[!] What is the farmer's sex?

Expects a single option response (required)

- male [male]
  - female [female]
- 

**2.11 marital status**

What is your marital status? [READ]

Expects a single option response (required)

- Single [1]
  - Married [Married]
  - Cohabitation [Cohabitation]
  - Divorced [Divorced]
  - Widow(er) [Widow(er) ]
  - Other [6]
- 

Prerequisites

Skip when *marital status (2.11)* Not Equal 'Other [6]'

**2.12 marital status other**

Which other marital status?

(required)

---

**2.13 born raised**

Were you born in this community? Did you grow up here? [READ]

Expects a single option response (required)

- yes, I was born here, and I grew up here [1]
  - I only grew up here [2]
  - no, I am an immigrant [3]
  - other [4]
-

Prerequisites

Skip when *born raised* (2.13) Not Equal 'no, I am an immigrant [3]'

#### 2.14 immigrant

Which region or country did you migrate from?

Expects a single line text response (required)

Prerequisites

Skip when *born raised* (2.13) Not Equal 'other [4]'

#### 2.15 immi other

Please describe [keep it short]

(required)

#### 2.16 schooling

How many years of schooling did you receive? [also accept other organised education types like evening school and literacy classes]

Expects a numeric response (required)

#### 2.17 media

Indicate which of the following media you use (almost) every day: [READ]

Expects multiple selected options (required)

- Listen to the radio [1]
- Watch TV [2]
- Read a newspaper [3]

#### 2.18 household size

How many people lived within the household in the last year? Please count all the men, women and children you live with every day and share your food and income with.

Expects a numeric response (required)

#### 2.19 household head

What is your relationship to the head of the household? [READ]

Expects a single option response (required)

- I am the household head [1]
- spouse of household head [2]
- child of household head [3]
- part of the extended family [4]
- other [5]

Prerequisites

Skip when *household head* (2.19) Not Equal 'other [5]'

#### 2.20 hh head other

Please describe your relation with the household head. [keep it short]

(required)

Prerequisites

Skip when *household head* (2.19) Equals 'I am the household head [1]'

#### 2.21 hh head sex

Is the household head a man or a woman?

Expects a single option response (required)

- male [male]
- female [female]



**2.22 hh children**

How many children (under 18 years of age) live within your household?

Expects a numeric response (required)

---

**2.23 kind of farms**

What kind(s) of farm(s) do you work on? [READ]

Expects multiple selected options (required)

- farm(s) I own myself [1]
- sharecropping [2]
- family farm(s) [3]
- caretaker [4]
- my spouse's farm [6]
- my parent's farm [7]
- other [8]

Prerequisites

Skip when *kind of farms (2.23)* Excludes 'other [8]'

**2.24 kind of farm other**

Please specify the other kind(s) of farm(s) you work on

(required)

---

**2.25 other crops**

Apart from cocoa, which other crops do you farm? [WAIT]

Expects multiple selected options (required)

- bananas [1]
- cassava [2]
- citrus [6]
- cocoyam [3]
- maize [4]
- oil palm [5]
- plantain [8]
- rice [12]
- vegetables [9]
- yam [10]
- other [11]

Prerequisites

Skip when *other crops (2.25)* Excludes 'other [11]'

**2.26 other crops other**

Please specify the 'other crop(s)'

(required)

## 2.27 organisation

Are you member of an organisation or association? [READ]

Expects multiple selected options (required)

religious association [1]

ethnic association [2]

farmer organisation [3]

cooperatives [4]

other professional organisations [5]

youth associations [6]

woman's associations [7]

credit unions [8]

no membership [0]

other(s) [9]

---

### Prerequisites

Skip when *organisation (2.27)* Excludes 'other(s) [9]'

## 2.28 organisation other

Please specify the other kind(s) of association(s) or organisation(s)

(required)

---

## Section 3. Health

### 3.1 self perc. health

What do you think about the quality of your own health? [READ]

Expects a single option response (required)

- poor [1]
- fair [2]
- good [3]
- excellent [4]

---

### 3.2 NHIS coverage

How many of the **household size (2.18)** household members are covered by the NHIS?

Expects a numeric response (required)

---

### 3.3 decision health

Who generally makes decisions about health care? [READ]

Expects multiple selected options (required)

- I make those decisions myself [1]
- together with spouse/partner [3]
- spouse/partner [2]
- household head [9]
- someone else within the household [5]
- family head [7]
- parent [4]
- child [8]
- other [6]

Prerequisites

Skip when *decision health (3.3)* Not Equal 'other [6]'

### 3.4 decision health other

Please specify the other person

(required)

---

### 3.5 malaria

In the last 2 years, how many times did you personally suffer from malaria?

Expects a numeric response (required)

---

### 3.6 bednets

How many of the **household size (2.18)** household members have slept under a bednet last night?

Expects a numeric response (required)

### 3.7 hypertension

Do you suffer from hypertension?

Expects a single option response (optional)

- no [1]
- yes [4]
- yes, it was officially diagnosed by a doctor [2]
- I do not want to answer [3]

---

### 3.8 diabetes

Do you suffer from diabetes?

Expects a single option response (optional)

- no [1]
- yes [2]
- yes, it was officially diagnosed by a doctor [4]
- I do not want to answer [3]

---

### 3.9 medical care

Where do you go for medical care? [WAIT]

Expects multiple selected options (required)

- home treatment/herbs [1]
- hospital [2]
- individual doctor/nurse [3]
- maternity home [4]
- pharmacy [5]
- small clinic [6]
- spiritualist [7]
- traditional birth attendant [10]
- traditional healer [8]
- other [9]

Prerequisites

Skip when *medical care (3.9)* Excludes 'other [9]'

### 3.10 medical care other

Please specify the facility/person

(required)

---

### 3.11 medical facility distance

What is the travel time to the nearest clinic or hospital? [in minutes]

Expects a numeric response (required)

---

### 3.12 painkillers

On average how many tablets of painkillers do you use in a week? [paracetamol, ibuprofen, asprine, etc.]

Expects a numeric response (required)

---

### 3.13 tobacco

How many times per week do you use tobacco (cigarettes, pipe, snuffs, chewing tobacco)?

Expects a numeric response (required)

Prerequisites  
Skip when *tobacco (3.13)* Equals '0'

**3.14 smoke on farm**

Do you smoke on the cocoa farm? [READ]

Expects a single option response (required)

- no [1]
- yes [2]

---

**3.15 alcohol**

How many alcoholic drinks (beer, wine, distilled, ...) do you take per week?

Expects a numeric response (required)

---

Prerequisites  
Skip when *alcohol (3.15)* Less Than '1'

**3.16 drink on farm**

Do you drink alcohol before or during work on the cocoa farm? [READ]

Expects a single option response (required)

- no [1]
- rarely [3]
- often [4]
- yes [2]

---

Prerequisites  
Skip when *sex (2.10)* Equals 'male [male]'

**3.17 when pregnant worked**

When you were pregnant did you continue to work on the cocoa farm? [WAIT]

Expects a single option response (required)

- yes, I did all the normal work [1]
- yes, but I did only light work [3]
- no [2]
- other [4]
- I've not been pregnant [5]

---

Prerequisites  
Skip when *sex (2.10)* Equals 'female [female]'

**3.18 when pregnant worked MAN**

When your wife/partner was pregnant did she continue to work on the cocoa farm? [WAIT]

Expects a single option response (required)

- yes, she did all the normal work [1]
- yes, but she did only light work [3]
- no [2]
- other [4]
- I don't have a wife/partner [5]
- My wife was never pregnant [6]

---

Prerequisites  
Skip when *when pregnant worked (3.17)* Equals 'other [4]'  
Skip when *when pregnant worked MAN (3.18)* Not Equal 'other [4]'

**3.19 work during pregnancy other**

Please specify what 'other work arrangement or tasks ' applied on the cocoa farm during the pregnancy.

(required)

---

### 3.20 work during pregnancy ok

Is it okay for a pregnant woman, in the second half of the pregnancy, to continue to work on a cocoa farm? [WAIT]

Expects a single option response (required)

- yes, no problem [1]
- yes, but only for lighter tasks [2]
- no, but they can (help) farm other crops [3]
- no, pregnant women should not do any farming [4]
- no, pregnant women should not work at all [5]
- other [6]

#### Prerequisites

Skip when *work during pregnancy ok* (3.20) Excludes 'other [6]'

### 3.21 pregnant work other

Please describe the 'other' work

(required)

### 3.22 elderly lift carry

Do the elderly lift and carry the same kinds of loads as younger adult farmers? [READ]

Expects a single option response (required)

- no [1]
- yes [2]
- yes, but fewer [4]
- yes, but less heavy [3]
- yes, but fewer and less heavy [6]
- other [5]

#### Prerequisites

Skip when *elderly lift carry* (3.22) Not Equal 'other [5]'

### 3.23 elderly work other

Please describe the 'other' lifting and carrying the elderly do on the cocoa farm

(required)

#### Prerequisites

Skip when *age* (2.8) Less Than '60'

### 3.24 at your age lift carry

Do you at your age of **age (2.8)**, still lift and carry heavy loads?

Expects a single option response (required)

- yes, I lift and carry heavy loads [1]
- yes, but only normal loads [2]
- yes, but only light loads [3]
- no, I choose not to lift and carry loads anymore [4]
- no, I was told by others not to lift and carry loads anymore [5]
- no [6]
- other [7]

#### Prerequisites

Skip when *at your age lift carry* (3.24) Not Equal 'other [7]'

### 3.25 at your age lift carry other

Please specify the 'other' situation

(required)



**3.26 children sharp tool**

From what age can children help on the cocoa farm using sharp tools? [put '18' for 'only adults']

Expects a numeric response (required)

**3.27 children farm chemicals**

From what age can children help on the cocoa farm mix or spray cocoa farm insecticides, herbicides and fungicides? [or put '18' for 'only adults']

Expects a numeric response (required)

**3.28 children carry load**

From what age can children help on the cocoa farm carrying heavy loads? [or put '18' for 'only adults']

Expects a numeric response (required)

**3.29 safe farm young man**

From what age is it safe for a young man to go and work all alone on a cocoa farm?

Expects a numeric response (required)

**3.30 safe farm young woman**

From what age is it safe for a young woman to go and work all alone on a cocoa farm?

Expects a numeric response (required)

**3.31 pressure**

How often do you experience so much pressure (or thinking) in your life that your health suffers from it? [READ]

Expects a single option response (required)

never [1]

rarely [2]

often [3]

always [4]

Prerequisites

Skip when *pressure (3.31)* Equals 'never [1]'

**3.32 what pressure**

What kind of things do you feel pressure about? [PROBE]

Expects multiple selected options (required)

family [3]

cocoa farming [1]

other farming [6]

money [2]

other relationships [4]

other reasons [5]

Prerequisites

Skip when *what pressure (3.32)* Excludes 'cocoa farming [1]'

### 3.33 pressure farming

Is the pressure about cocoa farming only seasonal or constantly? [READ]

Expects a single option response (required)

- seasonally [1]
- constantly [2]
- other [3]

---

Prerequisites

Skip when *pressure farming (3.33)* Not Equal 'other [3]'

### 3.34 farm pressure other

Please specify the 'other'

(required)

---

Prerequisites

Skip when *pressure (3.31)* Equals 'never [1]'

### 3.35 pressure farming money

How exactly does your health suffer from the pressure (or thinking) about farming or money? [WAIT]

Expects a single option response (required)

- body pains [6]
- concentration problems [3]
- headaches [8]
- heavy migraines [1]
- negative thinking [4]
- no energy [5]
- sleeplessness [2]
- other [7]

---

Prerequisites

Skip when *pressure farming money (3.35)* Not Equal 'other [7]'

### 3.36 suffer pressure other

Please specify what other health problems you experience from pressure

(required)

---

### 3.37 suicide cocoa farmer

Do you know about a COCOA FARMER who worried so much about farming or money problems that he/she ended his/her life? [READ]

Expects multiple selected options (required)

- no, I don't [1]
  - yes, someone I cared much about [2]
  - yes, someone I knew personally [3]
  - yes, but not someone I knew personally [4]
-

## Section 4. Pain

### 4.1 talk about pain

[!] DISCUSS THE DIFFERENCE BETWEEN PAIN, INJURY AND ILLNESS. Tell the farmer that the following section is about PAIN from (cocoa) farming, both serious pains and light pains. It is not about injury or illness!

---

### 4.2 pain farm work

Do you regularly have muscle, joint or bone pain DURING, or AFTER working on the cocoa farm? [READ]]

Expects a single option response (required)

- no pain [1]
- sometimes light pain [2]
- sometimes pain [3]
- often pain [4]
- always in pain [5]

---

Prerequisites

Skip when *pain farm work (4.2)* Equals 'no pain [1]'

### 4.3 pain farm work body

In which body parts? [WAIT]

Expects multiple selected options (required)

- head [1]
- neck [2]
- shoulder [3]
- arm [4]
- wrist/hand [5]
- chest [13]
- trunk [6]
- back [7]
- waist [8]
- leg [9]
- knee [10]
- ankle/foot [11]
- other [12]

---

Prerequisites

Skip when *pain farm work body (4.3)* Excludes 'other [12]'

### 4.4 pain farm work body other

Which other body part(s)?

(required)

---

#### 4.5 pain farm tools

Do you experience pain when you use one of the following tools? [READ]

Expects multiple selected options (required)

- axe [1]
  - chainsaw [2]
  - harvesting hook/go to hell [3]
  - hoe [4]
  - knife [5]
  - cutlass [6]
  - (standard) pruner [8]
  - none of these [0]
- 

#### 4.6 rate heavy load

[!] Ask the farmer to show you how they normally lift a heavy load off the ground? Then rate it.

Expects a single option response (required)

- good technique [1]
  - bad technique [2]
- 

#### 4.7 heavier loads

Do you ever choose to carry extra heavy loads in order to finish farm work faster? [READ]

Expects a single option response (required)

- yes, all the time [1]
  - often [4]
  - rarely [3]
  - no [2]
  - I don't carry loads [0]
- 

Prerequisites

Skip when *heavier loads (4.7)* Equals 'I don't carry loads [0]'

#### 4.8 ask help load

Do you ask for help when you lift very heavy loads off the ground? [READ]

Expects a single option response (required)

- yes, I only lift it if somebody is around to help [5]
  - yes, but only if somebody is around to help [1]
  - often, if somebody is around to help [4]
  - rarely [3]
  - no [2]
  - I do not carry very heavy loads [7]
  - other [6]
- 

Prerequisites

Skip when *ask help load (4.8)* Not Equal 'other [6]'

#### 4.9 heavy load other

How in a 'other way' do you use help with the heavy load?

(required)

---

#### 4.10 minutes load to/from farm

How many minutes does it normally take to carry a normal load to or from your cocoa farm(s)?

Expects a numeric response (required)

#### 4.11 pain mistle pruning

Do you feel pain in any body part during or after mistletoe removal or pruning? Which body part? [WAIT]

Expects multiple selected options (required)

- I don't do this activity [13]
- no pain [0]
- head [1]
- neck [2]
- shoulder [3]
- arm [4]
- wrist/hand [5]
- chest [14]
- trunk [6]
- back [7]
- waist [8]
- leg [9]
- knee [10]
- ankle/foot [11]
- other [12]

---

##### Prerequisites

Skip when *pain mistle pruning (4.11)* Excludes 'other [12]'

#### 4.12 mistle pruning body other

Which other body part(s)?

(required)

---

#### 4.13 pain weeding clearing

Do you feel pain in any body part during or after weeding or clearing? Which body part? [WAIT]

Expects multiple selected options (required)

- I don't do this activity [13]
- no pain [0]
- head [1]
- neck [2]
- shoulder [3]
- arm [4]
- wrist/hand [5]
- chest [14]
- trunk [6]
- back [7]
- waist [8]
- leg [9]
- knee [10]
- ankle/foot [11]
- other [12]

---

##### Prerequisites

Skip when *pain weeding clearing (4.13)* Excludes 'other [12]'

#### 4.14 weeding clearing body other

Which other body part(s)?

(required)

---

#### 4.15 pain pod breaking

Do you feel pain in any body part during or after pod breaking? Which body part? [WAIT]

Expects multiple selected options (required)

- I don't do this activity [13]
- no pain [0]
- head [1]
- neck [2]
- shoulder [3]
- arm [4]
- wrist/hand [5]
- chest [14]
- trunk [6]
- back [7]
- waist [8]
- leg [9]
- knee [10]
- ankle/foot [11]
- other [12]

---

Prerequisites

Skip when *pain pod breaking (4.15)* Excludes 'other [12]'

#### 4.16 pod breaking body other

Which other body part(s)?

(required)

---

#### 4.17 farm activities pain

Which other cocoa farm activities cause you pain(s)? [READ]

Expects multiple selected options (required)

- bagging of cocoa [2]
- broadcasting fertilizer [6]
- drying of cocoa [3]
- felling trees [4]
- fermentation [5]
- harvesting pods [7]
- planting [8]
- spraying of pesticides [1]
- other [9]
- none of these [0]

---

Prerequisites

Skip when *farm activities pain (4.17)* Excludes 'other [9]'

#### 4.18 other cocoa activity pain other

Which other cocoa activity also causes pain(s)?

(required)

---



#### 4.19 tingling numbness

Do you experience tingling or numbness in any part of your body during or after cocoa farm work? [WAIT]

Expects multiple selected options (required)

- no tingling or numbness [0]
- head [1]
- neck [2]
- shoulder [3]
- arm [4]
- wrist/hand [5]
- trunk [6]
- back [7]
- waist [8]
- leg [9]
- knee [10]
- ankle/foot [11]
- other [12]

---

Prerequisites

Skip when *tingling numbness (4.19)* Excludes 'other [12]'

#### 4.20 numbness tingling body other

Which other body part(s)?

(required)

---

#### 4.21 take short rests

On the cocoa farm, do you constantly take short rests during the work to relax your muscles? Is this before they start to hurt or after?

Expects a single option response (required)

- I take a big rest when the muscle starts to hurt [4]
- I don't ever take short rests, only longer breaks [1]
- I start taking short rests when the muscle start to hurt [2]
- I take short rests well before the muscle starts to hurt [3]
- other [5]

---

Prerequisites

Skip when *take short rests (4.21)* Not Equal 'other [5]'

#### 4.22 short rest other

What other situation applies to the short rests?

(required)

---

#### 4.23 same task

On the cocoa farm, do you normally do the same task for hours at a time, or do you change tasks all the time? [READ]

Expects a single option response (required)

- I generally do the same task all day [1]
- I rarely change tasks during the day [2]
- I change tasks all the time [3]

---

#### 4.24 aware adapted tools

Have you ever heard of farm tools that are specially adapted for young people, women or the elderly? [like smaller size or less heavy]

Expects a single option response (required)

- Never heard of it [1]
  - I have heard of it, but do not know where to get it [2]
  - I have heard of it and know where to buy it [3]
  - I have such tools within my household [4]
-

#### 4.25 adapted tools

Are any of those farm tools that are specially adapted for young people, women or elderly used within the household? [WAIT]

Expects multiple selected options (required)

- everybody uses the same tools [6]
  - those special tools are not available in the shops [0]
  - such tools, although available in the shop, are not used [3]
  - yes, adapted tools are sometimes used [1]
  - yes, in general adapted tools are used [4]
  - other [5]
-

## Section 5. Illness

### 5.1 talk about illness

[!] Tell the farmer that the following section is about ILLNESS from (cocoa) farming, both serious illness and light illness. It is not about pain or injury!

---

### 5.2 illness stay home

In the last year, how many times did you have an illness FROM COCOA FARMING that made you stay home from your cocoa farm work?

Expects a numeric response (required)

Prerequisites

Skip when sex (2.10) Equals 'male [male]'

### 5.3 illness from cocoa farm WOMAN

In the last 2 years, have you experienced any of the following illnesses as a result of cocoa farming? [READ]

Expects multiple selected options (required)

- collapse [1]
- dizziness [2]
- fainting [4]
- joint and muscle inflammation [5]
- muscle cramps [6]
- nausea/vomiting [7]
- parasites/infestation [8]
- respiratory tract diseases/asthma [9]
- rheumatism [10]
- stomach problems [11]
- none of these illnesses [0]

Prerequisites

Skip when sex (2.10) Equals 'female [female]'

### 5.4 illness from cocoa farm MAN

In the last 2 years, have you experienced any of the following illnesses as a result of cocoa farming? [READ]

Expects multiple selected options (required)

- collapse [1]
  - dizziness [2]
  - impotence [3]
  - fainting [4]
  - joint and muscle inflammation [5]
  - muscle cramps [6]
  - nausea/vomiting [7]
  - parasites/infestation [8]
  - respiratory tract diseases/asthma [9]
  - rheumatism [10]
  - stomach problems [11]
  - none of these illnesses [0]
-

### 5.5 other illness

In the last 2 years, have you experienced any other illness(es) from cocoa farming?

Expects a single option response (required)

yes [1]

no [2]

---

#### Prerequisites

Skip when *other illness (5.5)* Equals 'no [2]'

### 5.6 other illness other

Please specify the 'other illness'

(required)

---

### 5.7 farm illness stay home

In the last 2 years, which of these farm activities have caused illness that made you to stay home for at least a day? [READ]

Expects multiple selected options (required)

bagging of cocoa [1]

carrying loads [2]

clearing of land [3]

drying of cocoa [4]

felling trees [5]

fermentation [6]

harvesting pods [7]

lifting [8]

mistleroe removal [9]

mix or spray pesticides [14]

planting [10]

pod breaking [11]

pruning [12]

weeding [13]

none of these [0]

---

### 5.8 impotence reasons

Some male cocoa farmers complain about impotence because of farming. What do you think can be the reason of this impotence? [WAIT]

Expects multiple selected options (required)

aging [9]

diabetes [1]

hypertension [2]

medication [3]

mental problems [4]

overworked [5]

pesticides [12]

pressure/thinking [6]

waist pains [7]

other [8]

none of these reasons [10]

I don't know [11]

---

Prerequisites

Skip when *impotence reasons (5.8)* Excludes 'other [8]'

#### 5.9 impotence reasons other

Specify what other reason(s)

Expects a single line text response (required)

---

#### 5.10 curse

Have you ever been the victim of 'duabo' because of cocoa farming?

Expects a single option response (required)

yes [1]

no [2]

maybe, I am not sure [3]

Prerequisites

Skip when *curse (5.10)* Equals 'no [2]'

Skip when *curse (5.10)* Equals 'maybe, I am not sure [3]'

#### 5.11 cause curse

What caused the 'duabo'? [short description]

(required)

---

#### 5.12 spiritual

Has cocoa farming ever created health problems for you that were related to the spiritual world? A health problem that can not be solved by a doctor in a hospital?

Expects a single option response (required)

yes [1]

no [2]

Prerequisites

Skip when *spiritual (5.12)* Equals 'no [2]'

#### 5.13 cause spiritual

Please give a short description of the cause and the nature of the health problem.

(required)

---

#### 5.14 someone spirit curse

Do you know a cocoa farmer who suffered illness because of duabo or because of spiritual problem? [READ]

Expects a single option response (required)

no, I don't [1]

yes, someone I care much about [2]

yes, someone I know personally [3]

yes, but not someone I know personally [4]

---

## Section 6. Injury

### 6.1 talk about injury

[!] Tell the farmer that the following section is about INJURY from (cocoa) farming, both serious injury and light injury. It is not about pain or illness!

---

### 6.2 times injury cocoa farm

In the last 2 years, how many times did you injure yourself on the cocoa farm in such a way that you needed to be treated?

Expects a numeric response (required)

---

### 6.3 injury during cocoa activity

In the last 2 years, did you have a (big, small, very small) injury on the cocoa farm, while doing one of the following activities? [READ]

Expects multiple selected options (required)

- bagging of cocoa [2]
- clearing of land [3]
- drying [4]
- felling trees [5]
- fermentation process [6]
- fertilizer application [7]
- harvesting pods [8]
- mistletoe removal [9]
- mixing or spraying of pesticides [1]
- planting [10]
- pod breaking [11]
- pruning [12]
- sharpening tools [13]
- carrying tools [14]
- lifting or carrying on the farm [15]
- transporting cocoa bags [16]
- weeding [17]
- no injury [19]
- other [18]

---

Prerequisites

Skip when *injury during cocoa activity (6.3)* Excludes 'other [18]'

### 6.4 injury from cocoa activity other

Which 'other cocoa activity' caused (an) injury/injuries?

(required)

---

Prerequisites

Skip when *injury during cocoa activity (6.3)* Includes 'no injury [19]'

#### 6.5 worst injury 2 yrs

In the last 2 years, during which cocoa farm activity did you injure yourself MOST SERIOUSLY? [READ]

Expects a single option response (required)

- no injury [0]
- bagging of cocoa [2]
- clearing of land [3]
- drying [4]
- felling trees [5]
- fermentation process [6]
- fertilizer application [7]
- harvesting pods [8]
- mistletoe removal [9]
- mixing or spraying of pesticides [1]
- planting [10]
- pod breaking [11]
- pruning [12]
- sharpening tools [13]
- carrying tools [14]
- lifting or carrying on the farm [15]
- transporting cocoa bags [16]
- weeding [17]
- other [18]

Prerequisites

Skip when *worst injury 2 yrs (6.5)* Not Equal 'other [18]'

#### 6.6 worst 2 yr activity other

Which other activity caused the worst injury?

Expects a single line text response (required)

Prerequisites

Skip when *worst injury 2 yrs (6.5)* Equals 'no injury [0]'

Skip when *injury during cocoa activity (6.3)* Includes 'no injury [19]'

#### 6.7 body part injured 2 yr

Which body part(s) did you injure? [WAIT]

Expects multiple selected options (required)

- head [1]
- neck [2]
- shoulder [3]
- arm [4]
- wrist/hand [5]
- chest [13]
- trunk [6]
- back [7]
- waist [8]
- leg [9]
- knee [10]
- ankle/foot [11]
- other [12]



Prerequisites

Skip when *body part injured 2 yr (6.7)* Excludes 'other [12]'

#### 6.8 worst 2 yr body other

Which other body part(s) did you injure?

Expects a single line text response (required)

Prerequisites

Skip when *worst injury 2 yrs (6.5)* Equals 'no injury [0]'

Skip when *injury during cocoa activity (6.3)* Includes 'no injury [19]'

#### 6.9 severity injury 2 yr

How severely were you injured?

Expects multiple selected options (required)

- small injury [1]
- injury caused work to stop [2]
- injury had to be treated at the hospital [5]
- big scars [4]
- permanent damage [3]
- amputation [6]
- dislocation of joint [7]
- bone fracture [8]

#### 6.10 worst injury cocoa activity adult life

In your ENTIRE ADULT LIFE, during which cocoa farm activity did you injure yourself most seriously? [READ]

Expects a single option response (required)

- no injury [0]
- bagging of cocoa [2]
- clearing of land [3]
- drying [4]
- felling trees [5]
- fermentation process [6]
- fertilizer application [7]
- harvesting pods [8]
- mistletoe removal [9]
- mixing or spraying of pesticides [1]
- planting [10]
- pod breaking [11]
- pruning [12]
- sharpening tools [13]
- transporting tools [14]
- transport cocoa in field [15]
- transport cocoa bags [16]
- weeding [17]
- other [18]

Prerequisites

Skip when *worst injury cocoa activity adult life (6.10)* Not Equal 'other [18]'

#### 6.11 other cocoa activity2

Which 'other cocoa activity'?

Expects a single line text response (required)

Prerequisites

Skip when *worst injury cocoa activity adult life (6.10)* Equals 'no injury [0]'

#### 6.12 body part injured ever

Which body part(s) did you injure? [WAIT]

Expects multiple selected options (required)

- head [1]
  - neck [2]
  - shoulder [3]
  - arm [4]
  - wrist/hand [5]
  - trunk [6]
  - back [7]
  - waist [8]
  - leg [9]
  - knee [10]
  - ankle/foot [11]
  - other [12]
- 

Prerequisites

Skip when *body part injured ever (6.12)* Excludes 'other [12]'

#### 6.13 worst ever body other

Which 'other body part(s)'?

Expects a single line text response (required)

---

Prerequisites

Skip when *worst injury cocoa activity adult life (6.10)* Equals 'no injury [0]'

#### 6.14 severity injury ever

How severely were you injured?

Expects multiple selected options (required)

- small injury [1]
  - injury caused work to stop [2]
  - permanent damage [3]
  - injury had to be treated at hospital [4]
  - amputation [5]
  - dislocation of joint [6]
  - bone fracture [7]
  - big scars [8]
- 

#### 6.15 times cut

In the last 2 years, how many times have you cut yourself with a sharp farm tool?

Expects a numeric response (required)

---

#### 6.16 times almost cut

In the last 2 years, how many times have you ALMOST cut yourself with a sharp farm tool?

Expects a numeric response (required)

---

**6.17 times cut other**

In the last 2 years, how many times have you accidentally cut someone else with a sharp farm tool?

Expects a numeric response (required)

**6.18 cuts farm tools**

If there were any cuts, with which sharp tool(s) did you cut yourself or someone else in the last 2 years? [READ]

Expects multiple selected options (required)

- no cuts [0]
- axe [1]
- chainsaw [2]
- harvesting hook/go to hell [3]
- hoe [4]
- knife [5]
- cutlass [6]
- rake [7]
- (standard) pruner [8]
- other [9]

Prerequisites

Skip when *cuts farm tools* (6.18) Excludes 'other [9]'

**6.19 cut tools other**

Specify the 'other sharp tool(s)'?

(required)

Prerequisites

Skip when *alcohol* (3.15) Equals '0'

**6.20 sharp tool alcohol**

Do you use sharp tools on your cocoa farm after drinking alcohol? [READ]

Expects a single option response (required)

- yes [1]
- often [4]
- rarely [3]
- no [2]

**6.21 sharp tool medication**

do you use sharp tools on your cocoa farm when using medication that makes you feel drowsy or sleepy? [READ]

Expects a single option response (required)

- yes [1]
- no [2]
- I never use medication that makes me drowsy or sleepy [3]

**6.22 ladder**

Do you use a ladder in the cocoa farm?

Expects a single option response (required)

- yes [1]
- often [4]
- rarely [3]
- no [2]

Prerequisites  
Skip when *ladder (6.22)* Equals 'no [2]'

**6.23 falls pff ladder**

In the last 2 years, how many times have you fallen off a ladder on the cocoa farm?

Expects a numeric response (required)

Prerequisites  
Skip when *falls pff ladder (6.23)* Equals '0'  
Skip when *ladder (6.22)* Equals 'no [2]'

**6.24 reason fall ladder**

What reason(s) made you fall of the ladder?

Expects multiple selected options (required)

- attacked by insect/animal [1]
- did not check ladder first [2]
- ladder broke [3]
- ladder unstable [4]
- ladder not well placed [5]
- nobody held the ladder [9]
- no three-point-contact [6]
- I overreached [7]
- other [8]

Prerequisites  
Skip when *reason fall ladder (6.24)* Excludes 'other [8]'  
Skip when *ladder (6.22)* Equals 'no [2]'

**6.25 fall ladder other**

What other reason made you fall?

Expects a single line text response (required)

**6.26 falls tree no ladder**

In the last 2 years, how many times have you fallen out of a tree on the cocoa farm (while not using a ladder)?

Expects a numeric response (required)

**6.27 bites on farm**

In the last 2 years, which animals and insects have bitten you on the cocoa farm? [WAIT]

Expects multiple selected options (required)

- no bites [1]
- ants [2]
- bee/wasp [3]
- blood sucker [4]
- scorpion [5]
- snake [6]
- other animal [7]
- other insect [8]

**6.28 pricks on farm**

In the last 2 years, which part of plants or trees have pricked you on the cocoa farm and caused injury or irritation? [READ]

Expects multiple selected options (required)

- no prick wounds [1]
- branch [2]
- thorn [3]
- tree stump [4]
- other [5]

Prerequisites

Skip when *pricks on farm* (6.28) Excludes 'other [5]'

**6.29 other prick**

What other thing on the cocoa farm caused the prick wound?

Expects a single line text response (required)

**6.30 nr ulcers**

In the last 2 years how many times did you get ulcers from working on the cocoa farm?

Expects a numeric response (required)

**6.31 eye injury**

In the last 2 years, did you experience eye injury or considerable eye irritation on the cocoa farm from any of the following? [READ]

Expects multiple selected options (required)

- no [0]
- chemicals [1]
- debris [2]
- insect [3]
- smoke/fire [4]
- stick/branch [6]
- other [5]

Prerequisites

Skip when *eye injury* (6.31) Excludes 'other [5]'

**6.32 eye injury other**

Please specify the 'other eye injury'

(required)

**6.33 injured falling object**

In the last 2 years did you injure yourself on the cocoa farm by something falling on you? What object? [WAIT]

Expects multiple selected options (required)

- no [1]
- cocoa pod [2]
- debris [4]
- (part of) a farm tool [5]
- tree [6]
- tree branch [3]
- other [7]

Prerequisites

Skip when *injured falling object* (6.33) Excludes 'other [7]'

**6.34 falling object other**

Which other falling object?

(required)

---

**6.35 injure skin**

In the last 2 years did you injure or irritate your skin from cocoa farm work because of any of the following? [READ]

Expects multiple selected options (required)

no skin injury/irritation [0]

burn [7]

fertilizer [1]

fungicides [3]

fungus [9]

herbicides [4]

insecticides [5]

parasite [8]

sensitivity to plants [2]

other [6]

---

Prerequisites

Skip when *injure skin* (6.35) Excludes 'other [6]'

**6.36 skin injury**

Please specify the 'other skin injury'

(required)

---

**6.37 nr falls/slips to fro farm**

In the last 2 years, how many times did you hurt or injure yourself by falling or slipping on your way TO or FROM the cocoa farm work?

Expects a numeric response (required)

---

**6.38 nr falls/slips**

In the last 2 years, how many times did you hurt or injure yourself by falling over, slipping or falling in a hole ON the cocoa farm?

Expects a numeric response (required)

---

Prerequisites  
Skip when *nr falls/slips (6.38)* Equals '0'

**6.39 slips fall injured body part**

Which body part(s) did you injure? [WAIT]

Expects multiple selected options (required)

- head [1]
  - neck [2]
  - shoulder [3]
  - arm [4]
  - wrist/hand [5]
  - trunk [6]
  - back [7]
  - waist [8]
  - leg [9]
  - knee [10]
  - ankle/foot [11]
  - other [12]
- 

Prerequisites  
Skip when *slips fall injured body part (6.39)* Excludes 'other [12]'

**6.40 slips falls other body part**

Which other body part(s)?

Expects a single line text response (required)

**6.41 nr injury lift carry**

In the last 2 years, how many times did you hurt or injure yourself during cocoa farm work by lifting or carrying a heavy load?

Expects a numeric response (required)

Prerequisites  
Skip when *nr injury lift carry (6.41)* Equals '0'

**6.42 carry lift injured body part**

Which body part(s) did you injure? [WAIT]

Expects multiple selected options (required)

- head [1]
  - neck [2]
  - shoulder [3]
  - arm [4]
  - wrist/hand [5]
  - chest [13]
  - trunk [6]
  - back [7]
  - waist [8]
  - leg [9]
  - knee [10]
  - ankle/foot [11]
  - other [12]
-



Prerequisites

Skip when *carry lift injured body part (6.42)* Excludes 'other [12]'

**6.43 lift carry other body part**

Which other body part(s)?

Expects a single line text response (required)

## Section 7. Losses

### 7.1 total doctor visits

In the last year, how many times IN TOTAL did you go to see a doctor because of pain, illness or injury from cocoa farming?

Expects a numeric response (required)

### 7.2 days lost pain

In the last year, how many DAYS did you have to stay away from the farm because of PAIN caused by cocoa farming?

Expects a numeric response (required)

### 7.3 pain nr times medcare

In the last year, how many of the **total doctor visits (7.1)** times did you go to see a doctor because of PAIN caused by cocoa farming?

Expects a numeric response (required)

### 7.4 days lost illness

In the last year, how many DAYS did you have to stay away from the farm because of ILLNESS caused by farming?

Expects a numeric response (required)

### 7.5 illness nr times medcare

In the last year, how many of the **total doctor visits (7.1)** times did you go to see a doctor because of ILLNESS caused by cocoa farming?

Expects a numeric response (required)

### 7.6 days lost on injury

In the last year, how many DAYS did you have to stay away from the farm because of INJURY caused by cocoa farming?

Expects a numeric response (required)

### 7.7 injury nr. times medcare

In the last year, how many of the **total doctor visits (7.1)** times did you go to see a doctor because of INJURY caused by cocoa farming?

Expects a numeric response (required)

### 7.8 cedis per med visit

How much money you normally spend on ONE visit to a doctor (including transport)? [in new cedis]

Expects a decimal response (required)

### 7.9 expenditure farm OSH

How much money do think you spend on buying medication for pain, illness or injury from cocoa farming per year? [in new cedis]

Expects a decimal response (required)

## Section 8. Agrochemicals

### 8.1 apply pest ferti

Are insecticides, fungicides, herbicides or fertilizers used on your cocoa farm(s)? [READ]

Expects multiple selected options (required)

- insecticides [1]
  - fungicides [2]
  - herbicides [3]
  - fertilizers [4]
- 

### 8.2 spray yourself

Do you spray the cocoa pesticides (insecticides, fungicide or herbicides) yourself? [READ]

Expects multiple selected options (required)

- I spray myself [1]
  - Someone else sprays for me [2]
  - Mass spraying/government spraying [3]
  - There is no spraying going on in my farm(s) [4]
- 

### 8.3 other farmers around

Are there other people around, who are not involved in the spraying and wear no protective clothing, while the cocoa farm is sprayed? [READ]

Expects a single option response (required)

- yes [1]
  - often [4]
  - rarely [3]
  - no [2]
- 

### 8.4 which chemicals

Which farm chemicals (pesticides and fertilizers) are used on the cocoa farm(s) where you work on? [WAIT]

Expects multiple selected options (required)

- no chemicals used [0]
  - I don't know all the products [1]
  - Mass spraying [11]
  - Akati Master [2]
  - Asasewura [13]
  - Cocofeed [12]
  - Condemn [3]
  - Confidor [4]
  - DDT [6]
  - Funguran [8]
  - Kocide 2000 [9]
  - Ridomil [5]
  - Sidalco [10]
  - Nordox [14]
  - Champion [15]
  - Aktara [16]
  - Gramozone [18]
  - Roundup [17]
  - other [7]
-

Prerequisites  
Skip when *which chemicals (8.4)* Excludes 'other [7]'

#### 8.5 chemicals other

Please specify the 'other' chemical product.

Expects a single line text response (required)

Prerequisites  
Skip when *spray yourself (8.2)* Excludes 'I spray myself [1]'

#### 8.6 read label

Before you use, do you always read the instruction on the label of the cocoa farm chemicals? [WAIT]

Expects a single option response (required)

- yes, always [6]
- yes, but only once [7]
- yes, sometimes [1]
- no, but I know what to do [4]
- no, but they explain me in the shop [3]
- no [2]
- other [5]

Prerequisites  
Skip when *read label (8.6)* Not Equal 'other [5]'

#### 8.7 label other

Please explain the 'other'

(required)

#### 8.8 mixing involve

Are you involved in the mixing or putting cocoa farm chemicals into a sprayer? [READ]

Expects a single option response (required)

- no [1]
- yes, I do it alone [2]
- yes, but I am guided by someone else [3]
- other [4]

Prerequisites  
Skip when *mixing involve (8.8)* Equals 'no [1]'

#### 8.9 bare hands

Is the chemical product touched with the bare hands during scooping it, during mixing the solution or when putting it in the sprayer? [READ]

Expects a single option response (required)

- no [no]
- yes [2]

Prerequisites  
Skip when *mixing involve (8.8)* Equals 'no [1]'

#### 8.10 test strength solution

How do you find out if the spray solution is strong enough? [WAIT]

Expects multiple selected options (required)

- judging by colour [1]
- measure carefully before mixing [2]
- taste the solution [3]
- other [4]

Prerequisites

Skip when *test strength solution (8.10)* Excludes 'other [4]'

#### 8.11 test strength other

What 'other way' do you use to find out the strength of the mixture?

(required)

---

Prerequisites

Skip when *mixing involve (8.8)* Equals 'no [1]'

Skip when *spray yourself (8.2)* Equals 'Someone else sprays for me [2]'

#### 8.12 nozzle

Do you sometimes blow through the nozzle of the sprayer if you find it to be blocked? [READ]

Expects a single option response (required)

yes [1]

no [2]

---

Prerequisites

Skip when *spray yourself (8.2)* Excludes 'I spray myself [1]'

#### 8.13 effect body spraying

Have you ever experienced any effects on your body after spraying your cocoa farm, or in the days immediately after? [WAIT]

Expects multiple selected options (required)

no effects [1]

coughing [12]

fainting [7]

headache [6]

itching [8]

rash [9]

respiratory problems [3]

skin irritation [2]

sneezing [4]

spots [10]

vomiting [5]

other [11]

---

Prerequisites

Skip when *effect body spraying (8.13)* Excludes 'other [11]'

#### 8.14 other effects spray

Which other effects on your body?

(required)

---

Prerequisites

Skip when *spray yourself (8.2)* Includes 'There is no spraying going on in my farm(s) [4]'

#### 8.15 sudden illness

Have you ever experienced sudden illness, during or directly after working with cocoa farm chemicals?

Expects a single option response (required)

yes [1]

no [2]

---

#### 8.16 know people sudden illness

How many people do you personally know who have suddenly fallen ill, during or directly after working with cocoa farm chemicals?

Expects a numeric response (required)

**8.17 someone died pesticide**

Did you personally know anyone who died after working with cocoa farm chemicals? [READ]

Expects a single option response (required)

- no, I don't [1]
- yes, someone I care much about [2]
- yes, someone I know personally [3]
- yes, but not someone I know personally [4]
- yes, I knew several people who died [5]

---

**8.18 poisoning treatment**

How should you treat somebody with poisoning from cocoa farm chemicals? [WAIT]

Expects multiple selected options (required)

- I don't know [0]
- activated charcoal [2]
- bring to safe place [6]
- eat palm oil [1]
- eat pawpaw [7]
- read label [3]
- take the person to hospital [4]
- wash the person with water [5]
- other [8]

Prerequisites

Skip when *poisoning treatment (8.18)* Excludes 'other [8]'

**8.19 poison treatment other**

Please specify the 'other treatment'

(required)

Prerequisites

Skip when *spray yourself (8.2)* Excludes 'I spray myself [1]'

**8.20 eat while chemical**

Do you eat while using cocoa farm chemicals? [READ]

Expects a single option response (required)

- yes [1]
- rarely [3]
- often [4]
- no [2]

Prerequisites

Skip when *drink on farm (3.16)* Equals 'no [1]'

Skip when *alcohol (3.15)* Equals '0'

Skip when *spray yourself (8.2)* Excludes 'I spray myself [1]'

**8.21 drink while chemical**

Do you drink alcohol before or while using cocoa farm chemicals? [READ]

Expects a single option response (required)

- yes [1]
- often [4]
- rarely [3]
- no [2]

Prerequisites

Skip when *smoke on farm (3.14)* Equals 'no [1]'

Skip when *tobacco (3.13)* Equals '0'

Skip when *spray yourself (8.2)* Excludes 'I spray myself [1]'

**8.22 smoke while chemicals**

Do you smoke while using cocoa farm chemicals? [READ]

Expects a single option response (required)

yes [1]

often [4]

rarely [3]

no [2]

---

Prerequisites

Skip when *spray yourself (8.2)* Excludes 'I spray myself [1]'

**8.23 spray medication**

Does it happen that you spray your cocoa farm while you are using any kind of medication? [READ]

Expects a single option response (required)

yes [1]

no [2]

---

**8.24 present while spraying**

Are you present in the cocoa farm, while it is being sprayed by someone else? [READ]

Expects a single option response (required)

yes, but I wear all the required protective clothing [0]

yes, but it happens that I am present without protective clothing [4]

yes, without protective clothing [1]

no [2]

---

Prerequisites

Skip when *present while spraying (8.24)* Equals 'no [2]'

**8.25 effect body present spray**

Have you ever experienced any effects on your body, after being present for the spraying of cocoa farm chemicals, or in the days directly after? [WAIT]

Expects multiple selected options (required)

no effects [1]

coughing [12]

fainting [7]

headache [6]

itching [8]

rash [9]

respiratory problems [3]

skin irritation [2]

sneezing [4]

spots [10]

vomitting [5]

other [11]

---

Prerequisites

Skip when *present while spraying (8.24)* Equals 'no [2]'

**8.26 eat present chemicals**

Do you eat while you are around people who are using cocoa farm chemicals? [READ]

Expects a single option response (required)

- yes [1]
  - often [4]
  - no [2]
  - rarely [3]
- 

Prerequisites

Skip when *present while spraying (8.24)* Equals 'no [2]'

Skip when *alcohol (3.15)* Equals '0'

**8.27 present chemicals alcohol**

Do you drink alcohol while around people who are using cocoa farm chemicals? [READ]

Expects a single option response (required)

- yes [1]
  - often [4]
  - rarely [3]
  - no [2]
- 

Prerequisites

Skip when *present while spraying (8.24)* Equals 'no [2]'

Skip when *tobacco (3.13)* Equals '0'

**8.28 present chemicals smoke**

Do you smoke while you are around people who are using cocoa farm chemicals? [READ]

Expects a single option response (required)

- yes [1]
  - often [4]
  - rarely [3]
  - no [2]
- 

**8.29 pregnant present**

Are pregnant women present while a cocoa farm is sprayed? [READ]

Expects a single option response (required)

- yes [1]
  - no [2]
  - it can happen [3]
- 

**8.30 children present**

Are children present while a cocoa farm is sprayed? [READ]

Expects a single option response (required)

- yes [1]
  - no [2]
  - it can happen [3]
- 

**8.31 prepare food spraying**

Do farmers prepare food on the cocoa farm while spraying is going on? [READ]

Expects a single option response (required)

- yes [1]
  - no [2]
  - it can happen [3]
-



Prerequisites

Skip when *spray yourself* (8.2) Excludes 'I spray myself [1]'

### 8.32 wash after spraying

Do you wash after spraying your cocoa farm before you eat or drink? [WAIT]

Expects a single option response (required)

- no [1]
- yes, I bathe first [2]
- yes, I wash my hands first [3]
- other [4]

---

Prerequisites

Skip when *wash after spraying* (8.32) Not Equal 'other [4]'

### 8.33 wash after other

Please specify in which other way this washing happens.

(required)

---

### 8.34 empty containers

Are empty insecticide, fungicide or herbicide containers reused for other purposes (like storage) within the household? [WAIT]

Expects a single option response (required)

- yes [1]
- yes, but not for food [3]
- no [2]
- other [4]

---

Prerequisites

Skip when *empty containers* (8.34) Not Equal 'other [4]'

### 8.35 empty container other

Please specify the 'other use of pesticide containers'.

(required)

---

### 8.36 store chemicals

Where are the cocoa farm insecticides, fungicides and herbicides stored within your household? [WAIT]

Expects multiple selected options (required)

- bedroom [5]
- buried [8]
- kitchen [7]
- living room [6]
- on farm [3]
- under bed [4]
- shed [2]
- store room [1]
- toilet [10]
- other [9]

---

Prerequisites

Skip when *store chemicals* (8.36) Excludes 'other [9]'

### 8.37 storage other other

Please specify the 'other storage' option.

(required)

---

**8.38 best place store chemicals**

What is the best place to store cocoa farm insecticides, fungicides and herbicides? [WAIT]

Expects multiple selected options (required)

- bedroom [5]
- buried [8]
- kitchen [7]
- living room [6]
- on farm [3]
- under bed [4]
- shed [2]
- store room [1]
- toilet [10]
- other [9]

Prerequisites

Skip when *best place store chemicals* (8.38) Excludes 'other [9]'

**8.39 best storage chemicals other**

Please specify the 'other best storage' option.

(required)

**8.40 accidents stored chemicals**

In the last 2 years, have you had any big or small accident within your household or on the farm with stored cocoa farming chemicals?

Expects a single option response (required)

- yes [1]
- no [2]

Prerequisites

Skip when *accidents stored chemicals* (8.40) Equals 'no [2]'

**8.41 accident store chemical children**

Were any children involved in any of the big or small accidents?

Expects a single option response (required)

- yes [1]
- no [2]

Prerequisites

Skip when *spray yourself* (8.2) Includes 'There is no spraying going on in my farm(s) [4]'

**8.42 reentry time**

How much time does it take before you go back to your cocoa farm after it has been sprayed with farm chemicals?

Expects a single option response (required)

- I don't wait to go back [0]
- After a couple of hours [1]
- 1 or 2 days [2]
- 3 or 4 days [3]
- 5 days or more [5]
- as specified on the product's label [6]

## Section 9. PPE

### 9.1 knowledge PPE

Which kinds of farm gear that can protect your body cocoa farming do you know? [WAIT]

Expects multiple selected options (required)

- (protective) boots [1]
  - cap [2]
  - dust mask [3]
  - gloves [4]
  - goggles [5]
  - hard hat [6]
  - long sleeve shirt/blouse [7]
  - long trousers [8]
  - nose mask [9]
  - overall [10]
  - respirator [11]
  - waterproof overall/raincoat [12]
  - wellington boots [13]
  - other [14]
  - I don't know any [15]
- 

Prerequisites

Skip when *knowledge PPE (9.1)* Excludes 'other [14]'

### 9.2 PPE other1

Please specify the 'other' protective gear

Expects a single line text response (required)

### 9.3 PPE always use

Which protective farm gear do you personally ALWAYS wear when you go to work on the cocoa farm? [WAIT]

Expects multiple selected options (required)

- (protective) boots [1]
  - cap [2]
  - dust mask [3]
  - gloves [4]
  - goggles [5]
  - hard hat [6]
  - long sleeve shirt/blouse [7]
  - long trousers [8]
  - nose mask [9]
  - overall [10]
  - respirator [11]
  - waterproof overall/raincoat [12]
  - wellington boots [13]
  - other [14]
  - none [15]
-

Prerequisites  
Skip when *PPE always use (9.3)* Excludes 'other [14]'

#### 9.4 PPE other2

Please specify the 'other' protective gear

Expects a single line text response (required)

---

#### 9.5 PPE always lacking

Is there any protective gear that you know you should also ALWAYS use but you don't use because it is lacking? [WAIT]

Expects multiple selected options (required)

- no [0]
- (protective) boots [1]
- cap [2]
- dust mask [3]
- gloves [4]
- goggles [5]
- hard hat [6]
- long sleeve shirt/blouse [7]
- long trousers [8]
- nose mask [9]
- overall [10]
- respirator [11]
- waterproof overall/raincoat [12]
- wellington boots [13]
- other [14]

---

Prerequisites  
Skip when *PPE always lacking (9.5)* Excludes 'other [14]'

#### 9.6 PPE other6

Please specify the 'other' protective gear

Expects a single line text response (required)

### 9.7 PPE clear weed

Which protective farm gear do you personally use when you clear and/or weed on the cocoa farm? [WAIT]

Expects multiple selected options (required)

- I don't weed or clear [0]
- (protective) boots [1]
- cap [2]
- dust mask [3]
- gloves [4]
- goggles [5]
- hard hat [6]
- long sleeve shirt/blouse [7]
- long trousers [8]
- nose mask [9]
- overall [10]
- respirator [11]
- waterproof overall/raincoat [12]
- wellington boots [13]
- other [14]
- none [15]

---

Prerequisites

Skip when *PPE clear weed (9.7)* Excludes 'other [14]'

### 9.8 PPE other3

Please specify the 'other' protective gear

Expects a single line text response (required)

---

Prerequisites

Skip when *PPE clear weed (9.7)* Includes 'I don't weed or clear [0]'

### 9.9 PPE clear weed lacking

Is there any protective gear that you know you should also use during clearing and/or weeding but is lacking? [WAIT]

Expects multiple selected options (required)

- no [0]
  - (protective) boots [1]
  - cap [2]
  - dust mask [3]
  - gloves [4]
  - goggles [5]
  - hard hat [6]
  - long sleeve shirt/blouse [7]
  - long trousers [8]
  - nose mask [9]
  - overall [10]
  - respirator [11]
  - waterproof overall/raincoat [12]
  - wellington boots [13]
  - other [14]
-

Prerequisites

Skip when *PPE clear weed lacking (9.9)* Excludes 'other [14]'

**9.10 PPE other7**

Please specify the 'other' protective gear

Expects a single line text response (required)

**9.11 PPE pesticide appli**

Which protective farm gear should always be used by any person who applies pesticides, fungicides or herbicides? [WAIT]

Expects multiple selected options (required)

- (protective) boots [1]
- cap [2]
- dust mask [3]
- gloves [4]
- goggles [5]
- hard hat [6]
- long sleeve shirt/blouse [7]
- long trousers [8]
- nose mask [9]
- overall [10]
- respirator [11]
- waterproof overall/raincoat [12]
- wellington boots [13]
- other [14]
- none [15]

Prerequisites

Skip when *PPE pesticide appli (9.11)* Excludes 'other [14]'

**9.12 PPE other4**

Please specify the 'other' protective gear

Expects a single line text response (required)

Prerequisites

Skip when *spray yourself (8.2)* Excludes 'I spray myself [1]'

### 9.13 PPE when spray self

Which protective gear do you personally use when applying insecticides, fungicides or herbicides on the cocoa farm? [WAIT]

Expects multiple selected options (required)

- (protective) boots [1]
  - cap [2]
  - dust mask [3]
  - gloves [4]
  - goggles [5]
  - hard hat [6]
  - long sleeve shirt/blouse [7]
  - long trousers [8]
  - nose mask [9]
  - overall [10]
  - respirator [11]
  - waterproof overall/raincoat [12]
  - wellington boots [13]
  - other [14]
  - none [15]
- 

### 9.14 PPE apply fertilizers

Which protective farm gear should always be used by any person who BROADCASTS fertilizers? [WAIT]

Expects multiple selected options (required)

- (protective) boots [1]
  - cap [2]
  - dust mask [3]
  - gloves [4]
  - goggles [5]
  - hard hat [6]
  - long sleeve shirt/blouse [7]
  - long trousers [8]
  - nose mask [9]
  - overall [10]
  - respirator [11]
  - waterproof overall/raincoat [12]
  - wellington boots [13]
  - other [14]
  - none [15]
- 

Prerequisites

Skip when *PPE apply fertilizers (9.14)* Excludes 'other [14]'

### 9.15 PPE other5

Please specify the 'other' protective gear

Expects a single line text response (required)

**9.16 PPE when ferti self**

Which protective gear do you personally use when broadcasting fertilizers on the cocoa farm? [WAIT]

Expects multiple selected options (required)

- I don't broadcast fertilizers [0]
  - (protective) boots [1]
  - cap [2]
  - dust mask [3]
  - gloves [4]
  - goggles [5]
  - hard hat [6]
  - long sleeve shirt/blouse [7]
  - long trousers [8]
  - nose mask [9]
  - overall [10]
  - respirator [11]
  - waterproof overall/raincoat [12]
  - wellington boots [13]
  - other [14]
  - none [15]
-



## Section 10. The End

### Prerequisites

Skip when *Consent (1.12)* Equals 'yes [yes]'

#### 10.1 No consent1

[!] The farmer does not want to participate?

Expects a single option response (required)

- Farmer does not want to participate [1]
- Farmer wants to participate [2]

### Prerequisites

Skip when *Consent (1.12)* Equals 'yes [yes]'

#### 10.2 No consent 2

[!] Thank the farmer for his/her time and talk to your supervisor to find a new farmer to interview.

### Prerequisites

Skip when *base or impact (1.3)* Equals 'Baseline study (non-trained) [1]'

Skip when *training (2.2)* Equals 'yes, from STCP/IIITA [1]'

Skip when *training check impact (2.6)* Equals 'Farmer was in the STCP OSH training [1]'

Skip when *impact but no training (2.7)* Equals 'The farmer was trained. It was a misunderstanding [2]'

#### 10.3 No impact farmer

[!] Thank the farmer and choose 'next' to send the data in. Then talk to your supervisor to find out how this could happen. He will also help to find a new (trained) farmer to interview.

### Prerequisites

Skip when *base or impact (1.3)* Equals 'Impact study (trained) [2]'

Skip when *training (2.2)* Equals 'no [4]'

Skip when *training (2.2)* Equals 'yes, from other organisation [2]'

Skip when *training check baseline (2.4)* Includes 'This farmer DID NOT receive OSH training from STCP [1]'

Skip when *baseline but training (2.5)* Equals 'The farmer was not trained. It was a misunderstanding [1]'

#### 10.4 No baseline farmer

[!] Thank the farmer and choose 'next' to send the data in. Then talk to your supervisor to find out how this could happen. He will also help to find a new (non-trained) farmer to interview.

#### 10.5 The end

[!] Thank the farmer for his/her time and choose 'next' to send in the data.