



PREVENTING AND REDUCING INJURIES AND ILL HEALTH IN COCOA PRODUCTION

**Learning about Sustainable Cocoa Production:
A Guide for Participatory Farmer Training, manual no. 4**

by

Samuel Tettey, Moses Ogoe and Sonii David
October 2009 version

**Sustainable Tree Crops Program
International Institute of Tropical Agriculture**



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Sustainable Tree Crops Program

Regional Office

International Institute of Tropical Agriculture (IITA)

P.O. Box 135, Accra, Ghana

International mailing: c/o IITA Ltd.

Carolyn House, 26 Dingwall Road

Croydon, CR9 3EE, U.K

<http://www.treecrops.org>

<http://www.iita.org>

Email: stcp-wca@cqiar.org

Contributions by:



About STCP

The Sustainable Tree Crops Program (STCP) constitutes a coordinated and innovative effort made 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 STCP is to improve the economic and social wellbeing of smallholders and the environmental sustainability of tree crop farms in West and Central Africa. STCP is hosted and managed by the International Institute of Tropical Agriculture.

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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 centres known as the Consultative Group on International Agricultural Research (CGIAR), formed in 1971.

IITA's mission is to enhance the food security, income, and well-being 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.

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- Photo of boy in the tree by Karin Desmarowitz
- Photo of man climbing a ladder by Moses Ogoe

Preface

Agricultural work all over the world is hazardous, resulting in a large number of farmers injuring themselves or even dying. Cocoa farming in West and Central Africa is no exception, with farmers facing many hazards and risks on a daily basis. Research suggests that weeding is one of the most dangerous activities, with 30% of surveyed adult farmers experiencing an injury during this activity. A smaller percent of farmers (3% or less) also experience injury during harvesting and pod breaking. Most of the safety and health hazards experienced by West African cocoa farmers are due to farmers' lack of knowledge and information about the hazards to which they may be exposed, carelessness in the handling of farm tools and agrochemicals, poverty and poor or limited health care. Improving farmers' awareness of hazards and risks and training them on how to minimize risk is one of the most effective ways of improving safety on cocoa farms.

This publication was developed by the Sustainable Tree Crops Program (STCP) as a guide for trainers involved with participatory training of cocoa farmers. It does not address the specific health and safety issues of paid agricultural workers. Trainers may be extension agents or farmers who have gone through a comprehensive training of trainers (ToT) program on occupational safety and health (OSH) in cocoa production. The discovery learning exercises contained in this manual should be treated as guides to be used flexibly and creatively by trainers.

Disclaimer: Although this manual provides tips on first aid, it does not provide training on first aid and is not intended to replace such training. We encourage all institutions involved in OSH training to support or provide specialized training on first aid to selected individuals in target communities.

The manual is divided into two sections. Section one contains bulletins that provide trainers with technical information on key topics related to occupational safety and health in cocoa production. Section two consists of 13 discovery learning exercises for use in participatory farmer training. The content of the exercises should be adapted to the context and situation of farmer training by, for example, changing the names of case study characters etc.

The training exercises in this manual can be completed in training sessions lasting approximately 12 hours. However, if time is a constraint, an abbreviated version of the curriculum can be covered in 3-4 hours by doing exercises 13 (improving safety on cocoa farms) and 7 (hazards associated with agrochemical use). Alternatively, any combination of exercises can be used to meet the needs of target audiences.

This manual is very much a work in progress and modifications will be made periodically. Feedback and comments on this publication are therefore warmly welcome and should be sent to:

Dr. Sonii David
Sustainable Tree Crops Program (STCP)
International Institute of Tropical Agriculture (IITA)
c/o IITA Ltd.
Carolyn House, 26 Dingwall Road
Croydon, CR9 3EE, U.K
Email: s.david@cgiar.org or stcp-wca@cgiar.org

Sonii David
Accra, Ghana
October 2009

Glossary of technical terms

Acute exposure	Exposure to a massive dose of any hazard over a short period
Agrochemical	Any chemical product used in agriculture. These include fungicides, insecticides, fertilizers and herbicides
Asthma	A respiratory disease that causes the air passages to become narrow making breathing difficult and causing tightness of the chest and coughing
Cancer	A disease which develops in any part of the body when a cell or group of cells grows in an uncontrolled or unchecked manner
Chronic exposure	An exposure to small amounts of the hazard over a long period.
Dehydration	A condition which occurs when the human body loses too much water
Emergency	A serious situation or occurrence that happens unexpectedly and calls for immediate action
Exposure	Coming into contact with a hazard (e.g. bacteria, fungi, bacteria, toxic chemicals)
First aid	Emergency treatment given to an injured or ill person before professional care becomes available
Fracture	A broken bone
Fumes	A gas or vapour that smells strongly or is dangerous to inhale
Hazard	Any condition that has the ability to cause harm to a person or property or have a negative effect on the environment
Miscarriage	Loss or ending of a pregnancy by accident before 9 months
Occupational safety and health	A multi-disciplinary subject concerned with protecting the safety, health and welfare of people engaged in work
Personal protective equipment (PPE)	Any equipment or clothing which protects the wearer from hazards
Pesticide	Any poison that kills a living organism. This includes insecticides (for killing insects), fungicides (to kill fungi) and herbicides (for killing weeds)

Posture	The manner in which the trunk and other body part are held or positioned
Re-entry interval	The time interval between when a farm is sprayed with pesticides and when it is safe to go back to the farm
Risk	The probability or possibility that one will suffer harm or injury when there is a hazard
Splint	A thin piece of wood or other rigid material used to prevent the movement of a fractured or dislocated bone, or to maintain any part of the body in a fixed position.

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Part 1

Technical Bulletins for Trainers

Importance of Occupational Safety and Health in Cocoa Production

Introduction

Agricultural work all over the world is hazardous, with a larger number of farmers injuring themselves or even dying as a result of hazards encountered in doing farm work. Agriculture is the second most dangerous occupation next to mining. Cocoa production, like other forms of agricultural production can also be hazardous. Little information exists on injury rates in cocoa farms in West Africa. In this region, growing cocoa involves a high amount of manual labour and little use of machinery. Men, women and children are involved in various tasks in cocoa production and many farmers use both household and hired labour.

Farming activities undertaken by cocoa farmers includes land clearance, planting cocoa seedlings together with food crops and shade trees, weeding, pruning, removing mistletoe, applying agrochemicals (fungicide, insecticide, fertilizer, and herbicide), harvesting and transporting pods, fermenting and drying beans and transporting the beans to a storage area.

Most of the safety and health hazards experienced by cocoa farmers are due to:

- Farmers' lack of knowledge and information about the hazards to which they may be exposed
- Carelessness in the handling of farm tools and agrochemicals
- Poverty
- Poor or limited health care

Many of the tools used in cocoa production such as machetes, axes, harvesting hooks, pruners, ladders and chain saws could pose hazards to the farmer if not used properly. Cuts, bruises and broken bones are some of the injuries experienced by cocoa farmers. Most farming tools are designed for men and do not meet the physical needs of women and young people. Noise and vibrations from chain saws can cause hearing loss and dizziness. Back pains from bending over and other bodily pains are common complaints among cocoa farmers. Many cocoa farmers are exposed to serious health hazards when they use pesticides. Even conditions on farms may be risky by exposing farmers to poisonous animals and insects, not to mention falling branches, thorns, muddy conditions, rain and heat. When cocoa farmers are injured, they often have limited access to good medical care, particularly first aid or may have no money to seek medical care.

Most activities in cocoa cultivation are seasonal and need to be completed within a specified period. Farmers are therefore forced to work for long hours to complete their work on time.

What can be done to improve OSH in cocoa farming?

While it is not possible to get rid of all of the risks and hazards associated with cocoa farming, much can be done to lessen the problem. For example,

- Farmers can learn about hazards and can be trained on how to avoid them
- Governments can support research to improve tools and introduce equipment that removes the drudgery out of farming activities
- Health programs can set up first aid units in each village
- Governments can develop ways to make personal protective equipment more widely available and affordable

Farming Tools

Machetes, axes, harvesting hooks, pruners, ladders, earth chisel, knives and chain saws are some of tools used by both men and women in cocoa farm work for land clearance, weeding, pruning, harvesting and other activities. The use of these tools can be hazardous and lead to injury.

Sharp tools

Description of hazards

- Improper and careless use of tools
- Use by untrained and unsupervised youth and children
- Farmers injure other farmers working close to them.
- Improper use of chain saws by inexperienced, untrained operators
- Not being able to recognise a hazardous situation
- Use of sharp tools when drunk or under the influence of drugs (including medication)

Outcome of exposure

- Cuts to the operator himself/herself due to accidental contact of the sharp edge with a body part
- Injury to other farmers
- Heavy loss of blood
- Infected wounds if the cut is not properly treated
- Amputations, especially during chain saw operations

What can be done

- Take great care when handling sharp tools
- Always wear closed shoes when working on the farm
- When working together in a group, leave a wide enough distance between farmers
- Do not use sharp tools after taking alcohol or medicines that make you feel sleepy
- Chain saws should only be used by a trained operator or under the supervision of an experienced operator

Ladders

Description of hazard

Major problem with using ladders include:

- Use of weak or damaged ladders (for example, ladders with missing rungs)
- Incorrect placement of the ladder
- Overreaching while on ladder

Outcome

- Falls, which may result in broken bones and other injuries

What can be done

- Inspect ladder to ensure it is in good order
- The rungs of the ladder should be parallel to each other
- Do not use a weak ladder or one with missing rungs
- Place ladder on firm ground and not on tables, drums or other such supports. If ladder is too short for the job, find a longer one.
- To prevent the ladder from slipping it can be held in place by another person or by tying it to an object
- People passing through area where ladder is being used should not attempt to play with the ladder.
- Place ladder such that at least three rungs are above the highest place to be reached.
- The distance from the base of the ladder to the base of the surface to which the ladder is leaned should be one-fourth of the total length of the ladder
- Always ensure that you have “three-point-contact” i.e. either your two legs and a hand are in contact with the ladder or you have your two hands and a leg in contact with the ladder
- When carrying a load make sure you have one hand free to grip the ladder
- Do not overreach while working on the ladder. Overreaching may cause you to fall.

Carrying and Lifting Loads

Cocoa farmers often have to lift, carry, hold or set down loads such as seedlings, cocoa beans or pods, foodstuff and water.

Description of hazards

- Lifting loads that are too heavy above the shoulders
- Lifting loads below the knee with the back bent
- Lifting loads that do not have a handle (for example, bags of cocoa)
- Carrying bulky loads that do not allow the farmer to see where he/she is going
- Carrying loads in wet, muddy, dark conditions which may cause the farmer to fall
- Carrying loads for long distances
- Wearing clothes that may make it difficult to lift or carry loads
- Not being strong enough to lift and carry a load due to old age or illness
- Being thrown a load and moving quickly to prevent it from falling

Outcome of exposure

- The weight of the load may affect the neck, back and shoulder muscles
- Injury to the lower back and waist from lifting incorrectly
- Stress on the lower back and the waist when a load is carried away from the body
- Body pains, cuts and bruises and injuries from falling including broken bones, especially arms and legs
- Fingers may be trapped under the load when setting it down

What can be done

- Avoid moving a load if possible
- Where possible, only lift loads which you do not need help to lift. If the load is too heavy to lift on your own, ask someone to help you
- Reduce the load to be lifted
- The proper way to lift from the ground is as follows:
 - ✚ Position yourself so that the load to be lifted is directly in front of you
 - ✚ Place your feet apart, with one foot forward if the load is on the ground
 - ✚ Place the forward foot close to the load
 - ✚ If the load is on the ground, half-squat near the load by bending your knees
 - ✚ Grasp the load with one arm at the top of the load and the other at the base

- ✚ Lean slightly forward with your back straight
 - ✚ Keep your shoulder straight and your face forward. Do not twist your back
 - ✚ Lift the load using a smooth movement. Do not use a jerking or snapping motion
 - ✚ Rise to a standing position using your legs while keeping your back straight
 - ✚ When a load is between waist and shoulder level, pull it as close as possible to you before lifting
- When setting down a load, bend your knees. Do not bend your back
 - Walk more slowly when carrying a load in wet, muddy conditions
 - Make sure you can see where you are going when carrying a load
 - Stop to rest when carrying a heavy load, especially if covering a long distance
 - Pregnant women, the elderly and people who are recovering from illness or who are ill should not carry loads
 - Do not wear clothes that may get in the way when carrying a load
 - Store heavy objects at lower levels (below the knee) and light objects at higher levels (above the shoulder)
 - Experienced farmers should teach inexperienced young farmers how to carry loads and supervise them

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. These types of injuries 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.

Symptoms of repetitive strain injury include cramps, tenderness, stiffness and/or a tingling sensation in the affected muscles. You may also experience weakness and numbness in the muscles. It is not always easy to identify the affected muscle as the injury may affect several muscles or may not even be associated with a particular muscle or muscle group.

Description of hazard

- Using blunt farm tools such as machetes and axes is likely to cause injury to the muscles used in the operation because you will need to use the tool repeatedly to get the work done.
- Carrying out an activity for a long period without adequate rest. For example, holding a heavy load for a long time may affect the hand muscles.

Outcome

- Pain in the muscles of different parts of the body especially the hand, arm, wrist, back and fingers
- Not being able to use the affected muscle(s)

What can be done

- Take regular breaks of about a minute every 30 minutes while working on the cocoa farm, especially when weeding or chopping wood
- Use well sharpened tools such as machetes and axes
- When doing a repetitive task, change to a non-repetitive task from time to time. For example, when breaking pods, switch to harvesting pods.

Poor Posture

Poor postures are those positions that can cause injury when held over long periods.

Description of hazard

- Holding a poor posture for long periods (for example, bending the back for long periods when weeding or holding the head back when harvesting cocoa from tall trees)
- Holding a tool such as a chain saw or machete in an awkward position in order to reach a part of a tree
- Using tools not designed to meet the needs of specific groups of farmers such as women and youth. For example, a woman or a young person using a machete designed for an adult male may have to adopt an awkward posture to be able to use it.
- Twisting while lifting a heavy load from one side to the front or to the other side

Outcome

- Pain in the waist, knees, back of the neck, back and other parts of the body.
- Affected farmers may have to stop working and therefore lose income

What can be done

- Change body position frequently when working
- Change the task you are doing from time to time. For example, switch from harvesting pods high in the canopy to harvesting pods low down on the tree
- Take frequent rest breaks of short duration of about 2 minutes. Mid-day breaks should last at least thirty minutes to enable the body to sufficiently recover
- Farmers should use tools suited to their strength
- Tools designed specifically for women and youth should be available

Agrochemical Hazards

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.

Description of hazards for farmers

- All agrochemicals can negatively affect the human body and the environment if they are not properly applied, stored and disposed of.

The main activities involved in using agrochemicals include:

- Mixing and putting agrochemicals into a sprayer
- Application
- Cleaning up after use
- Storage
- Disposal of empty containers

Generally, the most risky activity for fungicide and insecticide use is mixing and loading because the pesticide is in a concentrated form. However, if a farmer does not have good spraying equipment and the appropriate personal protective equipment, application can also be very risky.

Application: Agrochemicals may get into the human body in the following ways:

- Through the mouth (for example, when farmers taste pesticide solutions or eat with unwashed hands after using agrochemicals)
- Through the skin (agrochemicals pass through the sweat pores directly into the blood of the exposed person)
- Through the nose by breathing agrochemical mists or fumes
- Not enough time is allowed between the time a pesticide is applied and the time the farmer returns to the farm. Since some farmers do not use proper personal protective equipment at this time, they are likely to be contaminated by the chemicals on the leaves and on the ground.

Storage

- Agrochemicals stored in bedrooms or other unsuitable places such as kitchens
- Leftover agrochemicals stored in containers intended for other liquids (for example, soft drink bottles)

Disposal: using agrochemical containers as drinking cups and for storing food






Outcome of exposure to the hazard




- There are different types of agrochemicals, some more poisonous than others. Agrochemicals have many negative effects, depending on the type. These effects include:
 - ✚ Cancer
 - ✚ Sterility (inability to produce children)
 - ✚ Deformed children because the parents (either mother or father) were exposed to a harmful agrochemical before the child was conceived or when the child was in the womb
 - ✚ 'Burning' of the skin
 - ✚ Skin irritation
 - ✚ Developing symptoms of an asthmatic attack
- The outcome of exposure to agrochemicals depends on many things such as:
 - ✚ **The means (route) by which the agrochemical gets into the body.** Some chemicals can affect the throat when swallowed, while others can affect the lungs when inhaled.
 - ✚ **The particular organ which the chemical may affect.** Some chemicals affect the liver, while others may affect the kidneys. Some agrochemicals affect a body system e.g. the central nervous system, making body coordination difficult
 - ✚ **How often the farmer is exposed to the agrochemical.** The more often the farmer is exposed to the chemical the greater is the possibility that he/she would get ill
 - ✚ **Individual farmers' response.** Some people have greater resistance than others
- There are two types of effects to being exposed to agrochemicals. A farmer may be exposed to high concentration of an agrochemical over a short period. This is called **acute exposure**. In this situation, the farmer feels ill immediately or after a day or two. Farmers may not link the general feeling of sickness and skin irritation to the agrochemical.
- A farmer may be exposed to small quantities of agrochemicals at a time over a long period. This is called **chronic exposure**. In this situation, the farmer may fall ill or sick many years after the exposure.
- Agrochemicals stored in kitchens could be mistaken for salt and may contaminate food in the kitchen
- People will inhale fumes from agrochemicals stored in bedrooms
- People, especially children, may drink leftover agrochemicals stored in soft drink bottles

What can be done

Application

- Look for the label on an agrochemical container. Do not buy an agrochemical that has no label or whose label does not provide the information mentioned below.
- Farmers should carefully read the label on the agrochemical container so that they are aware of the risks involved and apply safety precautions. Farmers who cannot read should ask someone to read and explain the label to them.
- Labels provide information on:
 - ✚ The name of the agrochemical
 - ✚ How poisonous the chemical is
 - ✚ Ingredients
 - ✚ The appropriate PPEs to be used
 - ✚ Recommended re-entry interval
 - ✚ How the agrochemical affects the body
 - ✚ First aid measures to be taken if someone is exposed to the agrochemical
- Understand hazard symbols. The common ones are listed below:

Symbol	Name of symbol	Meaning
 	Toxic sign	A warning of danger, especially with regard to poisonous chemicals. T+ is used to indicate that the chemical is considered to be very toxic
	Warning sign	This is to warn generally about the presence of danger and may be accompanied by a note indicating the nature of the hazard
	Oxidising agent (O)	The chemical supports or causes the burning of materials
	Highly inflammable (F)	The chemical can easily burn

Symbol	Name of symbol	Meaning
	Harmful (X)	The chemical is an irritant or is harmful. This symbol is normally accompanied by phrases such as 'avoid contact with skin' or 'do not breathe'.
	Corrosive (C)	The chemical can cause serious damage to anything that it comes in contact with including eyes, skin, tissue under the skin, the respiratory system if inhaled and the digestive system if swallowed
	Environmental hazard	The chemical is hazardous to the environment and should be disposed of as directed on the container

- Do not eat, drink or smoke when using agrochemicals
- Wear gloves and use a can (instead of your hand) when applying fertilizer
- Only use recommended agrochemicals
- Use a good quality sprayer that does not leak. Check your sprayer for leakage before spraying
- Be aware of wind conditions and direction when you spray to protect yourself from pesticides
- Do not contaminate yourself by putting a sprayer nozzle into your pockets
- Do not blow through a blocked nozzle. Use a piece of wire to unblock the nozzle.
- Leave a cocoa farm right after spraying and do not go back until it is safe to do so, as indicated on the agrochemical label (re-entry interval). Each agrochemical has a different re-entry period. In case the re-entry interval is not indicated on the label, seek advice from an agrochemical dealer or extension agent. If you have to go back to the farm before the end of the re-entry interval, wear a long sleeve shirt, long trousers, rubber boots and gloves
- After spraying, remove the clothes you wore when spraying and store them somewhere. Do not mix the clothes you wore while spraying with other dirty clothes. Wash the contaminated clothes separately from other clothes
- Always take a bath after spraying

Storage

- The best place to keep agrochemicals is in a locked storage room away from the main house
- Never keep agrochemicals in a kitchen because they might contaminate food and drinking water
- Do not keep agrochemicals in bedrooms because the vapours or mists are likely to be breathed in by those sleeping in the room.
- Store agrochemicals in their original containers. This is to avoid other people taking agrochemicals kept in a different container to be something else.
- Keep all agrochemicals out of the reach of children

Transfer

- Do not transfer agrochemicals from one container to another container
- If it is necessary to put agrochemicals into smaller containers, use a good quality empty container that had been used for the same agrochemical. Make sure the original label is in on the container before using it. If the label is missing, make a label and put it on the container

Disposal of empty agrochemical containers

- Bury empty agrochemical containers in a pit at least 50 m from water sources (rivers, streams, bore holes, dams etc) and as far as possible from children's play areas and domestic animals. Put flattened containers in layers of 10-15 cm deep and cover.
- Never reusing agrochemical bottles as drinking cups or food containers as it is impossible to rinse all of the agrochemical residue out of a container. Pesticide residues in empty containers may make people ill -- or even kill them!

Personal Protective Equipment (PPE)

Cocoa farmers should use different types of PPEs including boots, gloves, respirators and hats. While PPEs can protect against some farm hazards, it is important to select them carefully, use them the right type and maintain them correctly.

Description of the hazard

- Using the wrong type of PPE
- Improper use of PPEs
- Using PPEs that do not fitted properly
- Not maintaining PPEs properly

Outcome of exposure

Without the correct PPEs, farmers are exposed to harmful agrochemicals and pesticide poisoning

What can be done

- Select the appropriate PPE for the identified hazard
- Use PPEs well to ensure maximum protection
- Maintain PPEs
- Make sure PPEs fit comfortably

Recommended PPEs for use in all cocoa production activities

- Long trousers
- Long sleeve shirt/blouse
- Calf length rubber boots

The following is a list of additional PPEs for specific activities:

Spraying pesticides

- Long trousers with the ends tied with an elastic/rubber band
- Long sleeve shirt with the end of the sleeves tied with an elastic/rubber band
- Waterproof overalls or plastic raincoat
- A hat/cap made of plastic which covers the entire head and ears (like a shower cap)
- Goggles (with no side openings)

- Plastic gloves (that go up to the wrist)
- Respirator

Broadcasting fertilizer

- Plastic gloves
- Dust mask (if using fertilizer in a powder form)

Recommended PPEs when using a chainsaw

- A hard hat
- A face shield (visor)
- Vibration absorbing gloves

Proper use and maintenance of PPEs

- Wear trousers on the outside of the rubber boots. Tie a piece of elastic or a rubber band around the bottom of the trousers
- Do not tuck trousers inside the rubber boots as this may result in some chemicals going into the boot and cause injury
- Wear shirt sleeves over the gloves. Tie elastic over the end of the shirt sleeves
- Do not put the shirt sleeves inside the gloves as this may result in some chemicals going into the gloves and cause injury
- Make sure to wear goggles over your eyes at all times
- Adjust the band of the goggles and respirator so that they fit comfortably
- Use the right size of gloves and boots
- When removing PPEs, remove gloves last to avoid contaminating your hands
- Some PPEs such as rubber boots, trousers, shirts, gloves only need to be washing and dried and can be reused over and over
- The lifespan of some PPEs (for example respirators) may be indicated on it or in the manufacturer's manual. In case the manual is not available, the condition of the PPE should tell whether you should continue using it. Change the PPE as soon as it shows signs of wear and tear.
- Respirators may require certain parts or the whole thing to be replaced after some time. Some respirators are disposable and have to be thrown away when they have outlived their usefulness, while other can be reused again by replacing their cartridges. Before buying a respirator, make sure to ask the seller whether it is disposable one and how long it will last.

Vulnerable People

There are certain categories of cocoa farmers who need special care and attention. These include:

- Pregnant women
- Children
- Farmers 65 years and above (the elderly)

These groups of cocoa farmers face the same hazards as all other cocoa farmers in addition to some hazards that affect them specifically.

Pregnant Women

Women in rural areas of Africa work long hours and have heavy workloads even when pregnant, leading to a number of hazards. Major physiological changes occur in the bodies of pregnant woman in order to provide a suitable environment for the growing foetus. These changes include:

- ***Increase in blood circulation:*** An increase in blood volume causes an increase in the work output of the heart. Increased blood volume makes it difficult for the heart to adapt to physical exertion. Pregnancy also causes increased pressure in the veins of the legs, making it uncomfortable to stand for long periods.
- ***Changes in posture:*** Increased weight in the stomach area affects the normal low back curve (the lumbar lordosis) of the body making it difficult for pregnant women to perform many tasks, especially when standing.
- ***Weight gain:*** The gain in body weight, most noticeably in the last six months, is due to increase in body fluids and fat deposits and the growing child in the womb. This increased weight makes a pregnant woman tire easily.
- ***Changes in hormone levels:*** Changes in hormone levels in the pregnant woman's body, especially in the later stages of the pregnancy, cause ligaments to become more easily stretched, making the back more vulnerable to injury when lifting heavy weights

Description of hazards

- Heavy physical work
- Tiredness due to physiological changes when carrying out heavy physical work
- Standing for a long time (more than three hours a day)
- Frequently bending forward, stooping or reaching above shoulder height when handling even small loads
- Heavy sweating while working in hot weather conditions
- Exposure of an unborn child to agrochemicals

Outcome of exposure

- Carrying, lifting, holding heavy loads may result in a miscarriage or lead to premature birth
- Heavy physical work may reduce the size and weight of the baby
- Exposure to agrochemicals may cause dizziness and nausea
- Agrochemicals may pass through the placenta may cause a miscarriage or cause deformity in the child

What can be done

- Reduce the workload of pregnant women in all agricultural activities and encourage them to rest more. From the sixth month onward, a pregnant woman should have a lot of rest and only do light physical work
- Pregnant women should not carry, lift or hold heavy loads
- Pregnant women should stay away from farms that are being sprayed and should not apply any agrochemicals themselves
- Communities can develop rules to reduce workloads on pregnant women farmers

Children

Typically, children in cocoa growing household spend time on cocoa farms, helping with non-farm work (e.g. cooking, fetching water), doing light farm work after school, on weekends or during holidays or even in some cases, carrying out cocoa production activities on a regular basis.

Description of hazard

- Some work in cocoa production such as handling and applying pesticides, carrying heavy loads and using sharp tools are more hazardous for children compared with adults, because their bodies are still growing and their minds developing. Heavy lifting and straining, for example, can permanently injure growing spines or arms and legs
- Children have little work experience and knowledge of hazards and associated risks and how to prevent them
- Children are affected by much lower levels of agrochemicals than adults due to their smaller size and their immature immune systems
- Agricultural tools such as machetes are designed for adults and may not be suitable for children's body size and strength.
- Personal protective equipment are designed for adults and will not offer adequate protection to children
- A child, especially a girl, working alone on a farm may be exposed to sexual abuse

Outcome of hazards

- Accidents and injuries from using inappropriate sharp farm tools
- Musculoskeletal problems (for example, injury to the spine)
- Serious illness from exposure to agrochemicals
- Rape and sexual molestation

What can be done

- Follow recommendations by your government on what work children should be allowed to do and what work they should not do
- Never allow children below 18 years of age to be involved in mixing, loading or applying agrochemicals
- If children are involved in fetching water for spraying, this should be done the day before the spraying takes place
- Children should not stay on a farm during spraying and should not be allowed back on the farm until after the re-entry interval
- Children below the legal working age of the country (15-18 in most countries) should only be allowed to do tasks on cocoa farms which do not harm, abuse or exploit them or prevent them from going to school
- Children of school going age should not work on farms before school hours, during school hours or after school hours
- School children should not be withdrawn from school to do farm work at any time of the year
- Children should only use tools appropriate to their size and strength
- At the appropriate age, children should be trained on the use of farm tools and should always be supervised when using them
- Children working on cocoa farms should always be under the supervision of an adult
- All children who accompany their parents to the farm should wear long trousers or dress and long sleeves and boots
- Children working on cocoa farms should take a 10 minute break every hour and should not work for more than 2 hours a day
- Children 11 years and below should not use cutting/sharp tools
- The weight-size of the load that the child is required to carry should be considered in the light of the distance, weather conditions among other factors such as the health status of the child
- Sick children should not be made to work

Elderly Farmers

In West Africa, a high proportion of cocoa farmers are elderly people who are exposed to the same hazards of farm work as any other farmer.

Description of the hazards

- Do not have the same capabilities as younger people: The elderly are not as strong as they used to be and easily get tired. Their vision and hearing are often reduced and they may not see or hear well. Elderly people may also not be as fast as they used to be and may have difficulty walking about. Their bodies may no longer be flexible and they may find it difficult to bend down to pick things from the ground. It may be difficult for them to keep their balance. Slower reflexes mean that the elderly may not react quickly.
- More likely to suffer from health problems such as heart trouble, diabetes, high blood pressure and may be on medication

Outcome of hazards

- Reduced strength may lead to early fatigue resulting in injury since workers who are tired get injured easily
- Slower reflexes may lead to greater chance of injury as reaction time is slowed and therefore the farmer may not be able to take action to avoid the hazard. For example, an elderly farmer may not react fast enough to prevent a load from falling
- Heavy work may make some health conditions worse. For example, heavy work may make a weak heart worse. On the other hand, moderate farm work may reduce risk factors in certain illnesses cases such as diabetes
- Some health problems may lead to injury during agricultural work. Weakness in the legs leads to falls which may result in broken bones
- The effect of hazards tend to be greater with age

What can be done

- Elderly cocoa farmers should reduce their workload generally and take frequent rest breaks
- Elderly farmers should not be involved doing strenuous work such as carrying, lifting and holding heavy loads
- Government and farmer organizations should set up retirement plans for farmers

Farm Environment

The farm environment means all conditions on a farm including the weather, animals, insects, smoke, dust, trees, thorns, tree stumps etc. Cocoa farmers are exposed to this environment every time they go to their farms.

Description of the hazards

- High temperature (heat)
- Harmful fumes and dust from agrochemicals
- Harmful animals and insects
- Pointed sharp tree stumps
- Falling branches and dirt
- Thorns
- Fire and smoke from burning bush
- Ground and surface water contaminated by agrochemicals

Outcome of exposure

- Working in the sun in very high temperatures may cause farmers to sweat a lot and become dehydrated. Symptoms of dehydration include dizziness, increased heart rate, fast breathing, headache, feeling tiredness (fatigue), muscle cramps and nausea
- Breathing in agrochemicals
- Snakebites
- Bites from bees, ants and other insects
- Inhaling smoke from burning bush may affect eyes and lungs
- Being trapped by fire
- Drinking water is contaminated by agrochemicals

What can be done

- Drink as much water as possible (at least 2 litres of water every day) when working under hot conditions to prevent dehydration
- Protect yourself from many environmental hazards by using appropriate personal equipment (see technical bulletin on personal protective equipment)
- Avoid inhaling smoke by moving away from the direction of the smoke
- Do not enter a farm that has been sprayed until the recommended re-entry period has passed (see the technical bulletin on agrochemical hazards)

- Do not wash out agrochemical containers in streams and rivers. This will pollute the water used by people downstream and could make them ill
- Take care when lighting fires on the farm. Make sure that you are not trapped by the fire by planning an escape route
- Make sure to completely put out all fires before leaving the farm
- Do not allow children to play with fire on the farm.

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. First aid is important because in most rural areas medical facilities are far away and it is often difficult to transport an injured person to a health unit quickly.

Description of hazards

Different types of emergencies may occur on cocoa farms. The most common include:

- Breaking a leg or arm after falling
- Sprains from slips and falls
- Heavy bleeding from cuts caused by sharp farming tools
- Snake bites
- Bites from insects such as scorpions, bees, wasps
- Acute pesticide poisoning

This bulletin provides first aid tips on how to transport an injured person and handle snakebites, broken bones, cuts and acute pesticide poisoning. ***It is important to understand that going through the OSH training covered in this manual does not mean you are fully qualified to give first aid. There should be at least one person in each village who has specialized training on first aid.***

Outcome of inappropriate response

Emergency situations are made worse when people do not recognize that they are dealing with an emergency and need to seek immediate medical attention. This may be because there is no obvious or external sign of injury. For example, sleepiness due to a massive dose of an agrochemical may cause people to think that the affected person is just sleepy but not ill.

Delay in seeking medical attention may complicate a situation which could have been dealt with easily by a health unit or even cause the death of the injured person.

Improper lifting

- Lifting an injured person in the wrong way could result in pains and other injuries including broken bones. For example, spinal cord injuries could become worse if the injured person is not lifted properly

Wrong response to snake bite

- A delay in seeking assistance for the victim may have serious consequences, including death
- The venom may spread more quickly through the body if the snake is poisonous

- Traditional responses to snake bites (for example, drinking the juice from cassava leaves, trying to cut and suck out the poison) may worsen the condition of the victim
- The wound from the bite may become infected if not treated or dressed properly

Wrong response to cuts

- Failure to stop heavy bleeding may result in death
- Failure to treat a wound properly may result in infection which can lead to serious medical complications

Wrong handling of broken bones

- Wrong response may lead to the bone not healing properly or being twisted

What can be done

- It is important to stay calm in an emergency so that you can think clearly and take the right decisions and actions
- Assure the injured person that you are around to offer assistance and that he/she will be fine
- Do not behave in a manner that may frighten the injured person
- Remove him/her from the place where the injury occurred to the nearest safe place
- Administer first aid if you are qualified to do so

Transporting injured people

You can transport an injured person by carrying them on the back or in the arms of another person or on a stretcher.

Use a strong cloth and two poles (about 7 feet long) to make a stretcher. First, fold the cloth into two lengthwise and tie up the two overlapping ends. Put the poles into the fold. It may be necessary to tie the mid portion of the cloth to prevent the person from falling off the stretcher.

You can also use a board or a hammock as a stretcher to transport an injured person. When using a board, make sure to tie the injured person down using bush-ropes.

Two people, one holding the upper part of the body, the other person holding the legs, should carefully lift the injured person onto the stretcher. Use two people to carry a cloth or board stretcher.

If you are alone, place the injured person on his/her side and put the improvised stretcher at the his/her backside. Roll the injured person onto the stretcher and tie him/her, using bush rope, onto the stretcher. Lift one end of the stretcher and pull it.

If the injured person is conscious and can walk a little, transport them by having them put their arms around the shoulders of two people. Another way is to have two people make a seat for the injured person with their hands. Have two people, who are about the same height as the injured person, face each other. Ask each person to use his right hand to grip his left wrist. Ask each person to grip the right wrist of the other person with their left hand to form a seat. Have the injured person sit on their knitted hands with his/her hands over their shoulders.

Snake bite

Early signs of snakebite include vomiting, “heaviness” of the eyelids, blurred vision, involuntary twitching of the affected muscle and a tickling feeling around the mouth. The injured person may have a headache, feel dizzy and produce a lot of saliva.

Dos

- Make sure that the injured person remains as calm and quiet as possible. Anxiety and moving around a lot causes the venom from the bite to spread quickly through the body
- The affected person should try not to move the bitten arm or leg but should hold the affected limb close to the body
- Tie a piece of cloth or bush-rope fairly tightly just above the affected spot to prevent the snake's venom from travelling up the body.
- Transport the injured person to the nearest health centre. Place the person on his/her side to prevent them from breathing in vomit

Don'ts

- Don't spend a lot of time or effort killing or capturing the snake. If the snake is killed take it to the hospital
- Don't attempt to hold a snake that appears to be dead as it may not be completely dead and may bite when touched with bare hands. Use gloves or a stick to handle a dead snake
- Don't tie the cloth or rope too tightly (to the extent that you cannot feel a pulse) as this may cause gangrene in the affected limb.
- Don't cut the area near the wound and suck out the venom as this does not work.
- Don't give alcohol to the injured person

Broken bones (fracture)

- Symptoms include swellings, bruises and/or a change in the shape and size of the affected area. The injured person may have pain and loss of movement or power in the affected limb. A sharp, unpleasant noise may be heard when the ends of broken bones rub together. In some cases, the broken bone may stick out of the skin. The injured person may feel dizzy or cold from shock

- Avoid moving or putting weight on the broken limb. It may make the fracture worse
- Place two pieces of wood (called splints) on the two sides of the affected part and held them in place with a bandage or bush-rope. This will prevent the broken limb from moving
- If the fracture is in the upper leg, make sure that the splints go from the armpit to the legs to prevent the whole body from moving
- Hold a broken arm in place with a sling made from a piece of cloth (for example a head tie) or a rope
- Carry the injured person to a safe place so as to remove him/her from further danger
- Transport the person to the nearest health centre on a stretcher if he/she is unable to walk

Cuts

- Stop the bleeding by applying pressure to the cut for about 20 minutes with a clean piece of cloth or bare hands if necessary. If using bare hands, make sure to first wash your hands with soap and water. Do not keep checking to see if the bleeding has stopped. This may damage or dislodge the fresh clots that are forming and cause bleeding to start all over again
- Wash the wound with clean water only (do not use soap) and cover it with clean bandage or cloth to avoid infection. If you do not have a clean bandage or cloth, cover the cut with non-poisonous leaves that have a smooth surface which have been washed. Hold the leaves in place by using a bush-rope which has been washed
- If the cut is more than 3 inches (7.5 cm) long, take the injured person to a health centre as the cut may need stitching and proper dressing and the person may need to be given antibiotics against infection.
- If there is a deep, long cut on the leg, raise the leg higher so that the wounded part is higher than the person's heart by placing it on something (e.g. pillow). The injured person should not sit with the wounded leg hanging and should avoid walking on it to encourage quick healing so that the wound heals quickly.
- If the wound is on the arm, use a sling to hold the affected arm
- Pay attention to all types of cuts, even small ones, as they could become infected if not properly treated and develop into a serious problem such as tetanus.

Pesticide Poisoning

In a situation of acute exposure to pesticides, the affected person may suddenly feel ill and experience the following symptoms: skin irritation, dizziness, headache, not able to control arm and leg movements, nausea, shaking, diarrhoea, and a general feeling of weakness. Symptoms caused by very toxic pesticides include convulsions, irrational behaviour and loss of consciousness.

What to do

- If the agrochemical container is available, read the label for information about what to do
- If the person is vomiting, feels weak or drowsy, unable to control their arms and legs, or is experiencing nausea, shaking or diarrhoea, take them to the nearest health centre immediately
- If the clothes of the affected person are heavily soaked with the pesticide, remove them and wash the person down with clean water
- If some of the chemical has gone into the person's eyes, flush out the affected eye with water for 10-20 minutes
- If the person has lost consciousness, move him/her to a cool, shaded and airy place that is not contaminated
- Place the person on his/her side with the head low and the tongue stretched to prevent them from swallowing vomit
- Seek immediate medical attention. It will help to take the pesticide container along to the hospital

Part 2

Training Exercises

Exercise 1: Introduction to safety and health on cocoa farms

Learning objectives

- To identify hazards and risks in cocoa farming which may have a negative effect the health and safety of farmers
- To sensitize participants about the causes and effects (economic, physiological, physical, social, emotional) of injuries on farmers, families, communities and countries

Materials

- A flip chart and easel
- Markers
- Copy of the case study

Time needed: 45 minutes

Procedure

Read the case study presented below (several times if necessary) to ensure that all the participants understand. Participants can also be asked to summarize the story.

Case Study

Kofi owns a large cocoa farm. He and his family, consisting of his wife, Abenaa and his 20 year old son, Kweku, all work on the farm. Around 7one morning, all family members went to the farm to work. They were joined by 4 hired labourers. Kofi assigned Kweku and the 4 labourers to weed a section of the farm. He himself uses an axe to cut down a shade tree. After completing the work, Kofi climbed a ladder to cut down mistletoe from high up in the cocoa canopy using a machete. He worked alone. Abenaa spent her time weeding.

As the men worked close to each other with their machetes, suddenly, Kweku accidentally hits one of the men with the machete, cutting him deeply on the leg. The man started to bleed heavily. After a brief argument about who was at fault for the accident, the injured man put cassava leaves on the cut and returned to the village.

The sun was very hot that day and everyone was sweating heavily as they worked. They kept working all day with only a short break for lunch. By the time the family left the farm at 5:30 pm, it had started to rain heavily. Abenaa was carrying a large bundle of wood for use as firewood. Suddenly she slipped and fell on the muddy, slippery ground.

By the evening, Abena complained that her wrist and back are hurting. Kofi did not experience any problem until 3 days later when he started having pain in his right wrist.

Facilitate a discussion on the case study using the guide questions for discussion. Write the main points on the flip chart.

Guide questions for discussion

1. How did the following persons - the labourer, Abenaa and Kofi - get injured?
2. What health effects could the injured labourer experience?
3. What are some other situations described in the story that could lead to injury or health problems?
4. Do you know or have you heard of similar situations where farmers have experienced injury or health problems from working on cocoa farms?
5. Are cocoa farmers safe on their farms?
6. Why are safety and health issues important for cocoa farmers?
7. How are farmers and their families affected when they get injured or ill from doing farm work?
8. How is the country affected when cocoa farmers get injured or ill from doing farm work?

Exercise 2: Hazards associated with sharp tools

Learning objectives

- To increase farmers' awareness of the hazards associated with using sharp tools
- To identify ways to lessen the risks of using sharp tools

Materials

- Flip chart and easel
- Markers

Time needed: 45 minutes

Procedure

A. Sharp tools

Ask participants to identify all sharp tools used in cocoa production.

Divide the participants into two groups and ask each group to work on different tools. Ask each group to discuss:

- What makes each tool and its use hazardous (dangerous)?
- Type of injury or risk associated with the tool
- Type of farmer most at risk or affected (women/men, old/young people, children)
- What can be done to reduce or avoid the danger?

The groups can use the following table to organize their discussion.

Tool	Why hazardous or dangerous?	Type of injury associated with the tool?	Who is at risk or can be affected	What can be done to lessen/avoid risk

Have each group present their results to the whole group. Facilitate a discussion using the following guide questions.

Guide questions for discussion

1. Have you or someone you know been injured by a sharp tool? What happened?
2. What can be done to avoid injuries when using sharp tools?
3. What have you learned from this exercise?

Exercise 3: Hazards associated with poor posture

Learning objectives

- To increase farmers' awareness of the hazards of poor posture
- To identify ways to lessen the risk of injury from poor posture

Materials

- Flip chart and easel
- Markers

Time needed: 30 minutes

Procedure

Ask farmers to identify positions they use for a long time when farming which causes injury or pain. List each activity/position on the flip chart. Make sure to include the following:

- Bending the back for long periods (e.g. weeding, gathering of pods)
- Holding the head back (when harvesting from a tall tree)
- Holding a tool such as a chain saw or machete in an awkward position in order to reach a part of a tree.
- Sitting for long hours to break pods

Facilitate a discussion about posture using the following guide questions for discussion.

Guide questions for discussion

1. How do you feel when you use this position (ask for each example mentioned)?
2. When do you feel the effects?
3. What can you do to avoid injury/pain caused by using this position?
4. Do women farmers and children use the same tools as adult men? Does this cause any problems (pain, injury, etc.)? Why? What can be done about this problem?

Exercise 4: Using ladders safely

Learning objectives

- To raise farmers' awareness about the risks of using ladders
- To show farmers the correct way of using a ladder to reduce risk

Materials

- A weak or damaged ladder (bad ladder)
- A properly made ladder (good ladder)

Time needed: 40 minutes

Procedure

Ask the volunteer to show how farmers usually climb a ladder. Use the guide questions to facilitate a discussion about risks.

Guide questions for discussion

1. What injuries could this ladder cause?
2. How is the ladder positioned? How might this position lead to injury?
3. Have you heard of people falling from a ladder? Why did they fall?

Place the “good” ladder in the correct position and demonstrate how to use a ladder safely. Facilitate a discussion using the following guide questions.

Guide questions for discussion

1. What should you look for before using a ladder?
2. How can you position the ladder to ensure you do not fall?
3. How far should the foot of a ladder be from the base of the tree?
4. What is the correct position for ladder in terms of the highest place to be reached?
5. How should you climb a ladder?
6. What is the best way to climb a ladder with a load?

Exercise 5: Repetitive strain injury

Learning objectives

- To increase farmers' awareness about injury from repetitive strains
- To identify ways to avoid repetitive strain injury

Materials

- A blunt machete or axe
- A sharp machete or axe
- A piece of wood/tree stump

Time needed: 1 hour

Procedure

Ask for 2 volunteers. Give 1 volunteer the blunt tool and the other the sharp tool. Ask them to cut the wood for 5 minutes. Ask participants to inspect the work. Ask each volunteer to indicate whether they feel pain anywhere on their body.

Facilitate a discussion using the guide questions for discussion.

Guide questions for discussion

1. Ask each volunteer: Do you feel pain anywhere on your body?
2. Ask each volunteer: Would you expect to feel pain if you continued this activity for several hours? Why?
3. Which volunteer would you expect to have more pain/injury? Why?
4. Which activities done by cocoa farmers involve using the same action over a long period of time?
5. What usually happens when you do the same action over a long period of time?
6. In which parts of the body do you experience injury/pain after weeding, cutting down trees, etc.?
7. What can be done to avoid this type of pain/injury?

Exercise 6: Lifting and carrying heavy loads safely

Learning objectives

- To increase farmers' awareness about the risks of carrying heavy loads
- To show farmers the correct way of carrying heavy loads

Materials

- Flip chart and easel
- Markers
- Two loads of different weights, one with handles, the other without handles

Time needed: 1 hour

Procedure

Ask participants to identify all cocoa production activities that involve lifting, carrying and setting down. Discuss what injuries or harm these activities can cause and write the answers on the flip chart.

Ask 2 volunteers to demonstrate how to lift a load from the ground and set it down.

Demonstrate the proper way to:

- Lift from the ground
- Lift when the load is between waist and shoulder level
- Set down a load

Discuss the difference between how the volunteers lifted and the correct way of lifting. Discuss measures to prevent injuries when carrying loads.

Guide questions for discussion

1. What was different between the way the volunteers lifted and the way that I (facilitator) lifted?
2. What injuries can you get from carrying heavy loads incorrectly?
3. What can you do to make sure you are not injured when carrying heavy loads?
4. What should you pay attention to when carry a load in wet, muddy conditions?

Exercise 7: Hazards associated with agrochemical use

Note: This exercise assumes that participants have already had training on agrochemical application procedures

Learning objectives

- To create awareness on how agrochemicals enter the body during direct exposure
- To create awareness of the effects of agrochemicals on human health
- To identify methods to reduce or eliminate harmful agrochemical effects on farmers

Time needed: 1 hour and 30 minutes

Procedure

A. Introduction to agrochemical risks

Materials

- Flip chart and easel
- Markers

Procedure

Discuss the risks associated with exposure to agrochemicals using the following guide questions:

1. What is an agrochemical?
2. What types of agrochemicals are used in cocoa production?
3. What harm or illnesses can agrochemicals cause in humans?

Write participants' answers on a flip chart.

B. Exposure to pesticides

Materials

- 2 buckets
- 1 knapsack sprayer (preferably a leaky one from the community)
- 4 toilet tissues rolls
- Water
- Non-toxic dye, blue washing powder or food colorant (preferably red); for one or two samples of "fake pesticides"
- Cocoa farm

Procedure

a. Exposure to pesticides and herbicides during mixing and loading

Ask for volunteers to mix the “fake chemical” (dye and water) and load it into the knapsack sprayer as they normally do. Ask the rest of the participants to watch and make notes on how the operator is being exposed to the pesticides. Ask the group to check the operator’s clothes for signs of the “fake pesticide”.

b. Spray dye exercise

Wrap up a volunteer completely (except for the eyes) in white flip chart paper and/or paper kitchen towels or toilet paper, securing with masking tape. Ask the volunteer to spray cocoa trees for 10 minutes as though using a pesticide.

Ask the rest of the participants to watch and make notes.

After spraying, remove the sprayer and observe how much dye is on each part of the sprayer’s body (none, a little, a lot).

Facilitate a discussion using the guide questions.

Guide questions for discussion

1. In what ways were the operators exposed to chemical during mixing and loading? How much spray ended up on the operator?
2. In what ways was the operator exposed to chemical during application? How much spray has ended up on the operator?
3. Why and how was the operator exposed to the chemical?
4. How do agro-chemicals enter our body?
5. What illnesses can agro-chemicals cause in humans?
6. Which operation is more dangerous to farmers: mixing and loading or spraying? Why?
7. What can farmers do to minimize exposure to agro-chemicals?

c. Exposure to fertilizer during application

Materials

- 1 pair of plastic gloves
- Small amount of fertilizer

Procedure

Ask for two volunteers. Ask one person to touch the fertilizer wearing gloves; ask the other person to touch the fertilizer with their bare hands. Ask the person wearing the

gloves to remove them. Examine the hands of both people and facilitate a discussion using the guide questions.

Guide questions for discussion

1. In what ways are farmers exposed to fertilizers?
2. What do you see on the hands of the person who did not use gloves?
3. How does the fertilizer get into the body?
4. What are the effects of fertilizers on the body?
5. What have you learned from this exercise?

Exercise 8: Using and maintaining personal protective equipment (PPE)

Learning objectives:

- To create awareness on the importance of PPEs in cocoa farming activities
- To demonstrate the proper way of wearing and maintaining PPEs

Materials

- 1 pair of calf length rubber boots
- 1 pair of plastic gloves
- 1 respirator
- 1 plastic shower cap
- 1 baseball cap
- 1 pair safety goggles
- 1 water-proof overall or rain coat
- Long sleeve shirt
- Long trousers
- 2 rubber bands

Time needed: 1 hour

Timing: right after spray dye exercise

Procedure

Based on what farmers observed in the spray dye exercise facilitate a discussion using the following guide questions:

Guide questions for discussion

1. How can farmers protect themselves from pesticide exposure when applying/spraying pesticides?
2. What protective equipment do farmers normally wear when spraying?
3. What protective equipment should farmers wear when applying/spraying pesticides to reduce risks?

Ask for a volunteer and ask him to put on the recommended personal protective equipment. Point out how and when each item should be worn. Do a pressure test to see whether the respirator is fitted properly.

Put the baseball cap and the plastic shower cap on the ground. Spray both caps with the dye mixture. Examine the two caps, inside and outside.

Facilitate a discussion using the following guide questions:

Guide questions for discussion

1. What is the purpose of each PPE?
2. At what time or stage in pesticide usage should each PPE be worn?
3. How should you position the base of your trousers when wearing boots during spraying? Why?
4. How should you position the end of your long sleeve shirt during spraying? Why?
5. What is the purpose of tying an elastic band around the end of the trousers and sleeves?
6. What are some of the challenges farmers encounter in wearing protective equipment? How can we overcome these challenges?
7. What do you observe on the inside of the two caps? What have you learned from this demonstration with the two types of caps?

Demonstrate how to remove the PPEs. Discuss how to handle PPEs after use and how to maintain them using the following guide questions.

Guide questions for discussion

1. Which PPE should be removed last? Why?
2. After spraying, what should a farmer do next?
3. Why is it important to wash your body and clothes after spraying?
4. What needs to be done to maintain respirators?
5. How long do boots last? How long do gloves last?
6. What should you do to make sure that your equipment is in good condition?

Exercise 9: Reading agrochemical labels

Learning objectives

- To raise farmers' awareness of the importance of reading agrochemical labels
- To show farmers how to read agrochemical labels

Materials

- 4 samples containers of two types of agrochemicals (e.g. fungicide and fertilizer)
- Flip chart and easel
- Markers
- 10 or more copies of the list of agrochemicals hazard symbols

Time needed: 30 minutes

Procedure

Ask for two volunteers who can read the official language. Show one agrochemical container to the first volunteer, without allowing him/her to read the label. Ask the farmer to identify the safety and health risks associated with using that specific agrochemical. Give the second agrochemical container to the second volunteer, asking him/her to read the label and tell the group what it says about how to use the product safely.

Discuss the difference between how the volunteer who did not read the label and the farmer who read the label would apply the pesticide.

Pass the container samples around for participants to look at. Discuss what information agrochemical labels provide on safety and health risks by examining the containers. Information to mention includes:

- How the agrochemical affects the body
- Personal protective equipment farmers need to wear
- When people and animals can re-enter a treated area after application
- What to do if there is an accident

Pass around also copies of the agrochemical hazard symbols list and ask participants to identify what each symbol means.

Guide questions for discussion

1. Why is it important to read agrochemical labels?
2. What information do labels provide?

3. What should you do if an agrochemical does not have a label? Why?
4. What should you do if you cannot read an agrochemical label?
5. What does each symbol mean? What hazard does it refer to?

Exercise 10: Storage and disposal of agrochemical containers

Learning objectives

- To raise farmers' awareness about hazards caused by improper storage and disposal of agrochemical containers
- To teach farmers the least risky way to store and dispose of agrochemicals and empty containers

Materials

- Flip chart and easel
- Markers

Time needed: 45 minutes

Procedure

Note: *this exercise can be done by all participants together or by dividing them into two groups, one to discuss storage of agrochemical containers and the other to discuss disposal of containers.*

Divide participants into two groups. Ask one group to discuss how farmers usually store pesticides, identify the hazards involved and suggest what can be done to avoid these hazards. Ask the second group to discuss how farmers dispose of empty pesticides containers, identify the hazards involved and suggest what can be done to avoid these hazards. Each group should write up their answers on a flip chart in a table as presented below.

Places and ways used to store pesticides	Hazards involved	What can be done to lessen/avoid hazards during storage

Ways of using empty agrochemical containers and disposing of them	Hazards involved	What can be done to lessen/avoid hazard

Ask each group to present their results to the whole group.

Facilitate a discussion using the following guide questions.

Guide questions for discussion

1. What is important to consider when selecting a place to store agrochemicals?
2. What is the best place to store agrochemicals?
3. Why do you think farmers expose themselves to hazards when storing agrochemicals and disposing of empty containers?
4. What might happen if a farmer transfers an agrochemical from its original container to another container?
5. Have you heard of any accidents caused by storing agrochemicals in another container?
6. Why should you not reuse empty pesticide containers?
7. Do you know of people who use empty agrochemical containers for other purposes? Have they experienced problems?
8. Why is it important to consider where and how to dispose of empty agrochemical containers?
9. What is the best way to get rid of empty agrochemical containers?
10. Why is it important to bury agrochemical containers away from water sources? How far away from a water source should they be buried?

Exercise 11: Avoiding or reducing health and safety risks among pregnant women, children and the elderly

Learning objectives

- To identify hazards and risks in cocoa farming which have a negative effect on the health and safety of pregnant women, children and the elderly
- To identify ways of preventing or reducing the risk of injury or harm to vulnerable groups

Materials

- Three flip charts and easels
- Markers

Time needed: 1 hour and 30 minutes

Procedure

Read the case study presented below (several times if necessary) to ensure that all the participants understand. Participants can also be asked to summarize the story.

Case study

Agya Manu, a 68 year old farmer, decides to hand over the management of his 5 acre cocoa farm to his 29 year old son, Yaw, as he feels he can no longer handle the work on his own due to his age. The whole family including, Yaw, Agya Manu, his elderly wife, Maame Yaa and Yaw's pregnant wife, Akosua, work on the farm. They usually take Yaw and Akosua's two children, five-year old Kojo and three-year old Kwabena, with them to the farm.

Early one morning during the cocoa harvesting period, the whole family set off for the farm. On the way, Akosua buys some porridge for the children and stores it in an empty pesticide container she had washed with soap and water. Agya Manu and Maame Yaa boast of the days when they were young and could do the work that it would take five people to do today.

When they arrive on the cocoa farm, everyone starts working. Yaw and his father harvest pods. Akosua gathers the harvested pods, while Maame Yaa cooks and helps to gather the pods. Little Kojo fetches water and runs errands on the farm. He and Kwabena share the porridge while waiting for the meal their grandmother is preparing.

Everyone, including the elderly couple and Akosua, work hard for many hours. In the afternoon a heavy rainstorm soaks everyone, including the children. The family stumbles and slips on the muddy, wet ground as they walk home, shivering in the cold and dark.

The next day everyone except Yaw falls ill. After three days, their condition gets worse and the children, Akosua and the old couple are admitted at the nearby clinic. The children are suffering from pesticide poisoning and pneumonia. Akosua nearly loses her pregnancy and the old couple suffers from pains all over their body and general weakness.

Facilitate a discussion on the case study using the following guide questions:

Guide questions for discussion

1. What illnesses did the children, Akosua and the old couple suffer from?
2. What caused these illnesses?

Group work

Divide participants into three groups, one to work on children, another on pregnant women and the third on the elderly. Ask each group to discuss the following:

- Hazardous activities and environmental conditions in cocoa production that specifically affect that group
- Possible injuries or harm affecting that group
- Reasons for the risk to that group
- What can be done to avoid such injuries or harm

Each group should record the outcome of their discussion on a flip chart. Ask each group to think of “rules” that the community and households can enforce to protect that group.

Have each group present their results to the whole group and facilitate a discussion using the following guide questions for discussion.

Guide questions for discussion

1. What can you do to alert the community to hazards/risks faced by vulnerable groups?
2. Are the rules you are recommending possible to implement? What might be some problems that would make it difficult to enforce them?
3. What needs to happen for these rules to be accepted by the community?
4. Who will take responsibility for the next steps needed to bring your proposed suggestions to the attention of local authorities and the community in general?

Exercise 12: Handling farm emergencies

Learning Objectives

- To create awareness of farm injuries that require urgent medical attention
- To educate participants on how to identify emergency situations or conditions
- To educate participants on how to respond to emergency situations
- To help participants to understand how to handle or manage victims of emergency situations before medical attention is received

Materials

- A flip chart and easel
- Markers
- Bandage (or piece of cloth cut into a bandage)
- Two pieces of wood each of about 1" – 2" in diameter and a 1' long
- Cloth to make stretcher
- Cloth to make a sling
- Agrochemical container with label
- Shirt and trousers
- Clean water

Time needed: 1 hour and 30 minutes

Procedure

Present the following scenarios:

Scenario 1: A farmer falls off a ladder or slips and falls, breaking an arm or leg

Scenario 2: A farmer is bitten by a snake

Scenario 3: A farmer is cut deeply on the leg by a machete and is bleeding heavily

Discuss each scenario using the following guide questions:

Guide questions for discussion

1. How would you respond in this situation?
2. How many farmers are injured or harmed every year in this village while working on a cocoa farm?
3. How far is the nearest health centre from this village? How long will it take to get an injured person there?

4. What might happen if you do not move an injured person properly?
5. What might happen if you delay in moving injured persons to the health centre?
6. What is first aid?
7. Why is first aid important?
8. Is there any person in this community who is trained to provide first aid?
9. If not, what can the communities do to make sure that there is at least one person trained in first aid? If there someone trained in first aid, what can be done to train more people?

Transporting injured people

Discuss how to transport injured people. Demonstrate how to make a stretcher using a piece of cloth and wood.

Guide questions for discussion

1. How can two people carry an injured person who is conscious and can walk?
2. How can you transport an injured person who cannot walk?
3. How should you transport a person who is unconscious?
4. What materials can be used to make a stretcher?
5. How do you position an injured person to prevent them from swallowing vomit?

Proper handling of snake bites

Facilitate a discussion about snake bites. Using a volunteer, demonstrate the best way to handle a person with a snake bite and facilitate a discussion using the following guide questions

Guide questions for discussion

1. What are the signs and symptoms of a snake bite?
2. Why should a person bitten by a snake remain calm?
3. Is it necessary to kill the snake before attending to the snakebite victim? Why or why not?
4. Why should a piece of cloth (or bush-rope) be tied around the affected limb? Where should the tie be made? Why?
5. Why should you never use a tourniquet on a snake bite?
6. Why should you never try to cut a bite site to remove venom or suck venom from a snake bite?
7. Why should you not try to hold a snake that appears to be dead?

Proper handling of broken bones

Discuss the symptoms of broken bones. Demonstrate the best way to handle a person with a broken bone and facilitate a discussion using the following guide questions:

Guide questions for discussion

1. How can you tell if a person has a broken bone?
2. What is the first thing to do when moving a person with a broken bone?
3. How many people do you need to move the person?
4. What might happen if you do not move the injured person properly?

Proper handling of cuts

Discuss risks associated with cuts. Demonstrate how to stop bleeding and bandage a cut and facilitate a discussion using the following guide questions:

Guide questions for discussion

1. Why is it important to treat even a small cut?
2. What are the signs of a deep cut?
3. Why should you take a farmer with a serious cut to the hospital?
4. What is the first thing to do when someone has a deep cut and is bleeding from the wound?
5. Why should an arm with a cut or fracture be placed in a sling?
6. What can be done to ensure that a wound heals quickly?

Proper handling of pesticide poisoning

Ask for a volunteer. Wet his trousers and shirt with water to simulate clothes contaminated with agrochemicals. Demonstrate how to handle pesticide poisoning by reading the label on the agrochemical container and showing how to flush the skin and eyes with water. Facilitate a discussion using the guide questions.

Guide questions for discussion

1. Have you heard of anyone who has been poisoned being by pesticides in your community?
2. What are the signs of pesticide poisoning?
3. What should you do if a person shows these symptoms?
4. What do you do for a person whose skin is contaminated with pesticide?
5. What do you do if the eyes are affected?

Exercise 13: Improving safety on cocoa farms

Where there is not enough time to cover the full OSH curriculum (exercises 1-12), the training may be modified by doing fewer exercises. The following exercise is a modification of exercise 1, focusing only on risks associated with sharp tools, using ladders, repetitive strain injuries, hazardous farm conditions and lifting heavy loads

Learning objectives

- To identify hazards and risks in cocoa farming which are detrimental to health and safety of farmers
- To sensitize participants about the causes and effects (economic, physiological, physical, social, emotional) of injuries on farmers, families, communities and countries
- To identify best practices to reduce injuries in cocoa production

Time require: 2 hours

A. Case study and discussion

Materials

- A flip chart board and easel
- Markers
- Copy of the case study

Procedure

Read the case study presented below (several times if necessary) to ensure that all the participants understand. Participants can also be asked to summarize the story.

Case Study

Kofi owns a large cocoa farm. He and his family consisting of his wife, Abenaa, his 20 year old son, Kweku and his 70 year old father, Yaw, all work on the farm. Around 7 am one day, all the family members, including Abenaa who is 6 months pregnant, went to the farm to work. They were joined by 4 hired labourers. Kofi assigned Kweku and the 4 labourers to prune one section of the farm. He himself uses an axe to cut down a shade tree. Yaw worked in another part of the farm by himself. He climbed a ladder to cut down mistletoe from high up in the cocoa canopy using a machete. Abenaa spent her time weeding.

As the men worked close to each other with their machetes, suddenly, Kweku accidentally hits one of the men with the machete, cutting him deeply on the leg. The man started to bleed heavily. After a brief argument about who was at fault for occurrence of the accident, the injured man put cassava leaves on the cut and returned to the village.

The sun was very hot that day and everyone was sweating heavily as they worked. They kept working all day with only a short break for lunch. By the time the family left the farm at 5:30 pm, it started to rain heavily. Abenaa was carrying a large bundle of wood for use as firewood. Suddenly she slipped and fell on the muddy, slippery ground.

By the evening, several members of the family complained of not feeling well. Yaw complained that his wrist and back are hurting. Abenaa suffered from severe pain in the stomach and bleeding and has to be rushed to the nearest clinic. The next day, the family found out that Abenaa had lost the baby. Kofi did not experience any problem until 3 days later when he started having pain in his right wrist.

Facilitate a discussion on the case study using the guide questions for discussion:

Guide questions for discussion

1. What caused each person (the labourer, Abenaa, Yaw and Kofi) to get ill or injured?
2. What health effects could the injured labourer experience?
3. What are some other situations described in the story that could lead to injury or health problems?
4. Do you know or have you heard of similar situations where farmers have experienced injury or health problems from working on cocoa farms?

B. Identifying safety and health hazards on cocoa farms

Based on the case study and their own experience, ask participants to identify all health and safety hazards and risks associated with cocoa growing activities and conditions in a cocoa farm. List their answers on a flip chart. Make sure the list includes the following:

- Using sharp tools including chain saws
- Climbing ladders
- Carrying and lifting heavy loads
- Repetitive activities (e.g. weeding, harvesting of produce, etc.)
- Poor posture (bending over, holding head back, etc.)
- Not drinking enough water
- Falling branches and debris
- Sharp tree stumps and thorns
- Inhaling fumes from sprayed chemicals
- Snake bites
- Insect bites (bees, ants, etc.)
- Using agrochemicals

Ask participants to categorize the identified injuries and risks as task-related and those related to farm conditions.

Divide the participants into two groups. Have one group work on hazardous tasks and the second group work on hazardous farm conditions. Each group should provide the following information:

- What they identify as **the 3 most hazardous** tasks/environmental conditions. Make sure that the following hazards are covered:
 - ✚ Using sharp tools (machete, chain saw, etc.)
 - ✚ Using ladders (if used in that community)
 - ✚ Repetitive activities (weeding, harvesting, etc.)
 - ✚ Hazardous farm conditions such as falling branches/debris, sharp tree stumps and thorns, dust, heat, snakes, insects

NOTE: do **NOT** include agrochemical use as this should be handled in a separate exercise

- Why the activity/task or farm condition is hazardous (dangerous)?
- Type of injury or risk associated with the activity or farm condition
- Which type of farmer is most at risk or affected (women/men, old/young people, children, pregnant women)?
- What are the effects?
- What can be done to reduce or avoid the danger?

Activities/Farm conditions	Why hazardous / Dangerous?	Type of injury associated with the activity?	Who is most at risk or can be affected?	Effects	What can be done to lessen/avoid risk

Have each group present their results to the whole group. Make sure to point out missing information or correct information that is incorrect. Discuss the topics using the following guide questions. List the main conclusions on the flip chart.

Guide questions for discussion

Ladders

1. What should you look for before using a ladder?
2. How can you position the ladder to ensure you do not fall?
3. How far should the foot of a ladder be from the base of the tree?
4. What is the correct position for ladder in terms of the highest place to be reached?

5. How should you climb a ladder?
6. What is the best way to climb a ladder with a load?

Repetitive activities

1. What can be done to avoid injuries caused by using muscles for a long time?
2. Using blunt tools?
3. Why is taking frequent rest breaks important? How often should farmers rest?

Vulnerable groups

1. Are pregnant women at greater risk working on cocoa farms? Why? What can be done to prevent them injuring themselves?
2. Are elderly people at greater risk working on cocoa farms compared to younger farmers? Why? What can be done to prevent them injuring themselves?
3. Are children at greater risk working on cocoa farms (focus on child safety issues rather than child labour issues)? Why? What can be done to prevent them injuring themselves?

General issues

1. What clothes should farmers wear every day when they are working on cocoa farms to protect themselves?
2. What is first aid?
3. Is there any person in this community who is trained to provide first aid?
4. If not, what can the communities do to make sure that there is at least one person trained in first aid?

C. Lifting and carrying heavy loads safely

Ask participants to identify all cocoa production activities that involve lifting, carrying and setting down. Discuss what injuries or harm these activities can cause using the following guide questions.

Guide questions for discussion

1. What injuries can you get from lifting and carrying heavy loads incorrectly?
2. What can you do to make sure you are not injured when carrying heavy loads?
3. What should you pay attention to when carrying a load in wet, muddy conditions?
4. Why type of clothes should you wear when carrying a load?

Demonstrate the proper way to:

- Lift from the ground
- Lift where the load is between waist and shoulder level
- Set down a load