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Annex 2a: Ghana Harmonized Extension Training Manuals
Training GUIDE (modules)

Manual for Cocoa Extension in Ghana
Training GUIDE (modules)

Manual for Cocoa Extension in Ghana
Sources of Information

Certification Capacity Enhancement
Sustainable Cocoa Trainers’ Manual - For Access to Certification and Increased Productivity


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The ‘Manual for Cocoa Extension in Ghana: Training Modules’ is an accompanying trainers’ guide to the main Manual for Cocoa Extension in Ghana and it is intended for extension agents. 

The Training Modules is in two parts: A and B. Part A is the first chapter and deals with adult education, principles, comment and facilitation skills and group dynamics.

a. The Chapter is meant for the extension agent to refresh him/herself and train local cocoa facilitators on how to handle adult learners as individuals or as groups, communicate with them and facilitate training sessions.

A section on group dynamics has been included to enhance the extension agents’ or local cocoa facilitators’ interaction with cocoa farmers on the need for them to initiate group formation to enhance their access to finance, inputs, negotiation skills, training and establishment of businesses. In all cases, target groups (gender, young and old cocoa farmers) must be well identified and catered for to make learning comfortable.

b. Part B, Chapter 2 to 8 are basically on technical modules, environmental and social practices and emerging issues. Technical modules on pre-harvest and post-harvest cocoa activities, environmental, social practices and emerging issues which serve as requisite guide in the training of cocoa farmers by extension agents.

Each module is presented in a simple format as follows:

- Objectives (what will they learn during this session?)
- Benefits or Expected Output (advantages of applying the knowledge)
- Direction (what will be discussed and what not)
- Materials required
- Preparations required (what you have to do to get you moving to the field);
- Duration (how much time to spend)
- **Procedure:** Explanation (let them hear and understand what you say about the topic), Demonstration (let them see what you are doing), Exercise (let them practice by doing), Questions (ask direct, open and leading questions and probe further), Guidance (use examples, metaphors, anecdotes and stories to reinforce learning)
- Guide questions (have prepared questions to facilitate discussion)
- Summary (emphasize major issues discussed)
- Question (ask any further questions)
- Evaluation (check level of understanding of participants).

It is expected that the extension agents or local cocoa facilitators will read to understand the principles and practices before interacting with the cocoa farmers. The training modules will be an invaluable asset for extension delivery and we hope each extension agent or local cocoa facilitator will be guided by the format for a successful delivery of lessons to enhance cocoa productivity.
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Introduction

As agricultural extension agent or local cocoa facilitator, we work with either adult individual farmers or adult farmer groups. It is therefore necessary to understand adults as learners because what we believe about adults affects positively or negatively the way we relate to them in learning situations. Engaging adults mean communicating with them. The purpose of communication is to influence, persuade, socialize or meet a need. The ultimate goal of communication is to change behaviour and facilitate the adoption of innovation by farmers. However, farmers need guidance and a good environment in enhancing their learning capabilities, hence the need for good facilitation. As Extension agents or local cocoa facilitators, therefore, we need to employ adult education principles, communication and facilitation skills to create an enabling environment for adult group learning.

Objectives:

1. To help local cocoa facilitators know who an adult is.

2. To help local cocoa facilitators understand the meaning of Adult Education Principles and its importance.

3. To help local cocoa facilitators apply Adult Education Principles in teaching in their communities.

1.1. Who is an Adult?

Adults may be described in terms of some or all of the following characteristics:

- **Age:** adults are at an advanced stage of development beyond childhood.

- **Experience:** adults have greater wealth of life experiences reflecting their ages.

- **Intelligence:** adults (in general) have appreciable levels of good judgment and wisdom.

- **Maturity:** adults are advanced in terms of physical, intellectual, emotional, sexual, civic and social development.

Adults could thus be described as ‘grown, mature and intelligent people over 18 years with valuable experiences in life’.

Adults are independent, make their own decisions and they take responsibilities for their actions. They know what they want to learn and have plans to apply what they learn to improve their work and well-being.

As agricultural extension workers we work with either individual farmers or farmer groups. It is therefore necessary to understand adults as learners because what we believe about adults affects
(positively or negatively) the way we relate to them in learning situations.

1.1.1 Adult Education Principles

Adult Education Principles are basic facts about adults as learners. Knowledge in such principles helps educators to work effectively with adults.

*The following are some adult education principles.*

- Adults make decisions to learn voluntarily. They cannot be forced.
- Adults know why they want to learn what (the things) they want to learn.
- Adults have considerable life experience and bring these experiences into their learning situations. These experiences can be either both a helpful resource and a potential hindrance to new learning and must be respected and valued for their worth.
- Adults want to apply learning to life or work situations, and usually have immediate application for what they are learning. Thus they are highly motivated to learn in areas relevant to their needs.
- Adults have self-esteem and so have a need for respect, recognition and self-actualization.
- Adults are responsible and can accept responsibilities in the learning process.
- Adults learn best in supportive environments that do not threaten their self worth.
- Adults learn best through experience and reflection.
- Participation encourages adult learning.
- Constructive feedback from facilitators and/or peers motivates further learning.
- Adults vary in their “learning styles” how they receive and process information—so it is important to reinforce information and skill delivery through multiple methods and media.
- Adults learn best when they can set their own pace; they do not learn productively under severe time constraints ability.
Communication is a process by which two or more people exchange ideas, facts, feelings, or impressions in ways that each gains a common understanding of meaning, intent and use of message (Leagans 1961). Thus, when two people are aware of each other’s presence, they communicate. They interact in one way or another by expressing facts, information, feelings, impressions and attitudes. Doing or saying nothing also means something. It may show ‘I am not interested in you or what you are saying’ or ‘You look so important that I am afraid to talk to you’. The purpose of communication is to influence, persuade, socialize or meet a need. The ultimate goal of communication is to change behaviour and facilitate the adoption of innovation by farmers. Communication aims at establishing common understanding among parties.

Objectives:

- To help local cocoa facilitators know what communication is.

- To help local cocoa facilitators understand the elements of communication.

- To help local cocoa facilitators appreciate verbal and non-verbal communication skills.

- To help local cocoa facilitators cultivate critical listening and questioning skills.

- To help local cocoa facilitators promote effective communication.

- To help local cocoa facilitators know why some farmers may or may not talk.

1.2.1. Elements of communication

Communication is the process of transmitting information (message) from a sender to a receiver through a medium.

Sender: The person who conveys information or message to another person. The facilitator or extension agent, as sender, will convey information to his/her farmers in the community.

Receiver: The person who receives information or message from another person. The farmers in the community, as recipients, will receive information from his/her facilitator or the extension agent.

Message: The information or words we say or convey to another person.

Medium: Any channel through which we convey information or message to another person e.g. air, paper, TV etc.

Feedback: The message that a receiver or sender conveys to a person to confirm understanding of or question or answer an issue.

1.2.2. Types of communication

Communication can be either verbal or non-verbal. Verbal communication is more concerned with words spoken or
written, while non-verbal communication refers to body language or gestures. Non-verbal communication says more about the relationships between the sender and the receiver. As an agent you need to be sensitive and aware to the following non-verbal cues while communicating:

- Posture, eye contact, gestures, body movements of farmers.
- Incongruent behaviours.
- The tone of voice.
- Look for group of signals.
- Ask questions about nonverbal signals.

### 1.2.2.1 Communication Behaviour

As an extension agent involved in the training of farmers your communication behavior, (how you seek, process, disseminate information and elicit feedback) has a great impact on farmers. Communication skills, attitudes, knowledge level and relationship with farmers are critical factors affecting communication behaviour.

- As trained agents your knowledge level, re-enforced through training, and your attitude must exude confidence in yourself and the subject matter.
- Your relationship with farmers must be established well.
- Your critical communication skills must be persuasive in enhancing message delivery.

### 1.2.2.2 Communication Skills

Berlo (1960) noted that five communication skills are needed for effective message delivery and Extension agents must be fully equipped with these skills.

**Thes skills are:** Writing, Speaking (Encoding skills), Reading, Listening (Decoding skills) and Thought or Reasoning (which cover both encoding and decoding skills).

**Writing:** Putting down appropriate information on the subject matter logically and sequentially; painting, drawing, preparing a teaching aid.

**Speaking:** Lecturing, demonstrating, asking critical questions, paraphrasing questions, responding to questions or throwing questions back to farmers and eliciting feedback.

**Reading:** Gaining knowledge from books, people and things around.

**Listening:** Taking in information; observing and analyzing farmers’ reactions and nods and giving feedback. We listen to show interest, concern and empathy, and understand their problems. Be comfortable with silence. People might be thinking, so stop talking. Stop filling the silences with more talk.

**Thought or Reasoning:** Planning what to write, do logically and sequentially; what to say and why, whom to talk to, when and how to present and react to issues.

### 1.2.2.3 Promoting Effective Communication

**In order to promote effective communication, the extension agent must:**

- know herself/himself; know and understand the subject matter.
- Organize the message,
- Establish functional relationship with farmers in order to secure a good response to the message.
• Deliver effective message.

1.2.2.4 Subject matter
• Develop a good attitude towards the subject matter
• Have self-confidence to deliver the message
• Analyze and know very well your target group
• Have ability to humbly listen very well

1.2.2.5 Message organization
• Use a relevant or compelling message to arouse attention
• Define your title and objectives of your message
• In the body of message present ideas, facts in logical sequence
• Use appropriate painting, drawing or teaching aid
• Compare and contrast where possible
• Repeat key ideas
• Draw explicit conclusion for the farmer
• Leave implicit conclusion for the farmer

1.2.2.6 Functional relationship
• Establish good rapport
• Show positive attitude to the farmers, humming, nodding etc
• Be empathic
• Have a pleasing personality
• Be credible truthful, and honest in your dealings

1.2.2.7 Delivery of Effective Message
• **Arouse attention:** Use a relevant or compelling message to arouse attention
• **Title:** Define your title and objectives of your message
• **Message Content:** The message should be clear and understandable to the farmers, be specific and not vague, logical and sequential, be timely, accurate and up-to-date.
• **Message Delivery:** Talk less, talk sweet, talk truth, talk slow, talk loud, talk clear: explain to their hearing.
  - Avoid condemning
  - Use local terms, appropriate examples, pictures, compare and contrast where possible, proverbs to make communication interesting
  - Demonstrate for them (seeing) to see an activity and let them do it (skill training) where possible
  - During delivery of message make necessary eye contact with farmers, check body movements of farmers and ask questions where possible since farmers are distracted by their peers through conversations, socio-economic problems, their own thoughts.
  - Repeat key ideas
• **Listening:** Listen effectively by nodding, paraphrasing statements, effective eye contact, applauding and humming. Do not argue, interrupt, pass judgment too quickly and jump to conclusions.
• **Questioning:** Ask questions, paraphrase questions, respond to questions or throw questions back to farmers and elicit feedback.
Types of questions to ask
Asking good questions is a good communication skill and an art. There are three major types of questions you should bear in mind.

1. **Direct questions:** you ask for straightforward facts and data e.g. how many bags of cocoa did you harvest last year?

2. **Leading questions:** you give a hint about the expected answer e.g. did you use Confidor?

3. **Open questions:** you provide the farmer with the ultimate freedom to give his/her opinion e.g. what has been some of the challenges you face in cultivating cocoa.

Open questions may not necessarily give information you may want. As such probing questions are further used to get the desired information without directing the farmer.

Bear in mind that there are situations when farmers complain a lot, they can be asked or challenged what they themselves have done to solve their problems.

Why farmers may talk openly or not to extension agents. Bear in mind that in situations where the farmer for the first time is not certain of what is going to be discussed, their behavior would be influenced by:

- **Expectations:** would I have possible access to knowledge, inputs etc.

- **Suspicions:** what does this outsider want from me?

**Indifference:** another team of experts; a feeling of being socially inferior to the visitors; a feeling of inferiority in regard to his farming system compared to “modern” farming system represented by the extension agent.

**Courtesy:** He will try not to disappoint his visitors.

The indication is that the farmer must be put at ease, an environment created to show that they are respected and seen also as experts.

- Explain the concept (Hearing).
- Demonstrate it to the learner (Seeing).
- Let the learner do an exercise through practice (Doing).
- Guide the learner (use examples, metaphors, anecdotes and stories to reinforce the learning).

**Summary/ Conclusions:** Summarize and draw conclusions
Facilitation is the process of ensuring that all participants have free and fair opportunity to be actively involved in training, teaching and learning in a supportive and non-threatening environment.

Extension workers use adult education principles, communication and facilitation skills to create an enabling environment for adult group learning.

In order to function effectively as a facilitator of farmer groups, it is important for extension workers to understand the role of a facilitator and appropriate relationship with farmers during facilitation to promote participation and learning. Good facilitation and communication skills are essential in such adult learning methods as meetings, peer discussions, demonstrations, role plays, hands-on practice, presentations, group or team work and field visits.

In effect facilitation is a way of guiding discussions, field experiments or training that improves the learning effect within the group.

Objectives:
- To help local cocoa facilitator understand the meaning of facilitation.
- To help local cocoa facilitator know the principles of facilitation.
- To help local cocoa facilitator know the role of a facilitator.
- To help local cocoa facilitator know the problems facilitators encounter.
- To equip the local cocoa facilitator with facilitation skills.

1.3.2 Principles of Facilitation
- Facilitator draws out opinions and ideas of group members.
- Facilitator focuses on how people participate in the process of learning.
- A facilitator is neutral and never takes sides.

1.3.3 The Role of Facilitator
Your main task as a facilitator in a participatory training and learning situation is to create and manage an atmosphere that is conducive for free expression of views and consensus-building about problems or issues at stake.

As a facilitator you are a leader, referee, neutral, communicator, problem identifier, credible, transparent, patient, respectable, initiator and purposeful

Leadership Role:
- Focus on the set objective.
- Encourage constructive debate between group members.
- Bring out information from members of the group and allow new ideas to be
submitted.

- Promote new discussions when the group is drifting.
- Form cohesive, interactive and productive team.

**Facilitator act as a referee:**
- Maintain order of group discussion and prevent disturbances.
- Protect all members by ensuring that all contributions are treated equally.
- Control problematic people in the group and allowing everyone to participate freely.
- Adhere to the meeting timetable by ensuring completion of agenda in time.

**Facilitator is Neutral:**
- Should be pragmatic by viewing each point on its merits.
- Encourage feedback by promoting discussion of each point raised by all members.
- Being neutral throughout the discussion.

**Communicate Effectively:**
- Effective verbal communication.
- Effective non verbal communication.
- Receptive listening in all discussions.

**Problem Identification:**
- Gets to root cause of the problem.

**Confidence:**
- Facilitator should appear purposeful and in control to avoid insecurity.

**Authenticity:**
- Consistent in approach to task.
- Trustworthy to the group.

**Patience/Perseverance:**
- Appreciate the difficulties of the group work and give encouragement.

**Initiating:**
- Able to initiate the group to carry out group’s task.

**Respectable:**
- Should have admiration of the group.

**There are many things a facilitator does to accomplish these roles. Some of these are:**
- Makes people comfortable
- Encourages everyone to understand and participate in what is going on.
- Does not manipulate people. The facilitator guides people through a structured process without forcing an agenda.
- Shows respect to all participants.
- Manages time and progress of meeting well.
- Listens effectively and communicates clearly.
- Appreciates contributions from participants.
- Forges consensus and summarizes well.
- Manages group dynamics well.
- Does technical backstopping carefully
by providing information or making other technical interventions only when necessary.

• Uses feedback and reinforcement effectively.

1.3.4 Problems Facilitators Encounter

Quiet/Shy Participants

*Causes:*
• Shy/Timid group members.
• Members indifferent to the topic.
• Members distracted by pressing issues.

Talkative Participants

*Causes:*
• Some members naturally need attention.
• Some members are unprepared for the meeting.

Side Conversation

*Causes:*
• Some members bored with the meeting.
• Some members need to introduce an idea.

Disagreeable Participants

*Causes:*
• Some members are show-off by nature.
• Some members feel that they are being ignored.
• Some members are unable to make suggestions constructively.
Practice makes man perfect. This saying is true of facilitation. There are many different aspects of facilitation. A few are presented here to help you improve your facilitation skills. Facilitator should:

| Ensure good and comfortable sitting arrangement. | • Arrange the seating in a circle and semi-circle to ensure that everyone can see and hear each other  
• Seat in a shaded area, e.g. under trees or in a large room where this is available |
| Create good rapport among participants. | • Let participants introduce themselves or each other  
• Share amusing, but socially acceptable jokes.  
• Introduce yourself in an empathizing way: e.g. by introducing yourself the way farmers introduce themselves by “Day” names such as Kofi, Yaw, etc.  
• Encourage people to address each other with their first or “Day” names if this is socially acceptable |
| Help participants to understand what is going on. | • Present clearly the objectives of the meeting  
• Explain or let others who understand explain what is going on  
• Be patient when points are being explained  
• Recap important points  
• Ask questions for feedback |
| Encourage everyone to participate in what is going on. | • Invite people – especially silent participants and women – to contribute to what is going on.  
• Be comfortable with silence. People might be thinking, so stop talking. Stop filling the silences with more talk.  
• Probe issues further and ask for more opinions  
• Ask interesting questions.  
• Encourage people to ask questions and throw questions back to participants.  
• Give recognition to all answers, especially correct ones. If a farmer group is too large for an activity break it up into smaller groups.  
• Respect all views |
| Listen effectively. | • Face speakers when they are talking.  
• Pay attention to what is being said.  
• Reflect on what you hear.  
• Show your involvement by responding with verbal and non-verbal cues.  
• Ask for clarification where necessary.  
• Allow speakers brief pauses where this helps or allows for reflection  
• Provide feedback to acknowledge message and degree of understanding |
<table>
<thead>
<tr>
<th>Keep the group focused on the established objectives while maintaining some flexibility</th>
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<tr>
<td>Make group interaction active and interesting</td>
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<tr>
<td>Manage the processes of group dynamics (e.g. interruptions, disruptions and conflict)</td>
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<tr>
<td>Communicate clearly and encourage other to do the same.</td>
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<td>Probe to bring out the most n people</td>
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<td>Be assertive when necessary to maintain control</td>
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<tr>
<td>Build consensus from group discussions and summarize outcomes</td>
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<td>Manage time.</td>
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<td>Restate objectives if you find discussions drifting</td>
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<td>Keep a separate notebook or flipchart to jot down ideas you might want to come back to if they don’t fit in at the time they are raised</td>
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<td>Use a combination of methods and media (e.g. role plays and relevant posters) where appropriate</td>
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<td>Be enthusiastic and let it show</td>
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<td>Incorporate interesting activities</td>
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<td>Use icebreakers-jokes,-where and when necessary. Make sure these are of good taste</td>
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<td>Reduce interruptions from aggressive people by calling on them less often</td>
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<td>Let people finish what they are saying</td>
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<td>Stay focused on objectives but allow some flexibility- lead the group back to the objective if discussions drift too long</td>
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<td>Ask people to address the facilitator</td>
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<td>Speak audibly</td>
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<td>Keep eye contact</td>
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<td>Speak clearly</td>
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<td>Use appropriate non-verbal cues to emphasize what you are saying</td>
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<td>Listen attentively</td>
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<td>Observe cultural norms.</td>
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<td>Use leading statements such as:</td>
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<td>Can you expand on that idea?</td>
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<td>I know you have some experience with this, may be you can add something to what has been said</td>
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<td>I would like us to build on that idea a bit, are there other thoughts someone else may have?</td>
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<td>Are there other issues we should bring up here?</td>
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<td>Let group leader call people to order</td>
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<tr>
<td>Draw peoples’ attention to time and the need to make progress</td>
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<td>Summarize or ask someone to summarize what has been discussed and ask the farmer group whether the summary is a true reflection of what went on in the discussion</td>
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<tr>
<td>Ask the group if any important thing has been left out of the group</td>
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<td>Monitor the time spent on an issue to make sure adequate time is left for other issues</td>
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<tr>
<td>Explain to participants that it is necessary to cover other important issues.</td>
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</table>
What is a group?
A group should consist of two or more people who associate on a regular basis and seek to achieve common goals and objectives e.g. cocoa farmers association. Your main task as an extension agent is to help the cocoa farmers to take control of their lives and work together for their own benefit. Group formation is to enhance group access to finance, inputs, negotiation skills, training and establishment of businesses. In all cases target groups (gender, rich and poor, young and old cocoa farmers) must be well identified and catered for to make learning comfortable.

Rationale for working in groups
In many instances extension agents work with groups. There are very good reasons why this is so:

- It improves extension delivery to farmers and it is also cost effective than to the individual.
- By working in groups, farmers are able to combine and make the best use of their skills and resources which reduces risk in operation.
- It is easier to resolve conflict when working with groups.
- Gaining access to credit facilities such as loan and input facilities are made easier.
- It is a fact that farmers learn faster how to work together, analyze problems together and plan together in a group.
- A group’s decision to make changes succeeds more easily as a rule than as individual’s decision, because the group provides the necessary back-up and support systems to cope with the problems in the adjusting phase when implementing the change.
- They are able to build trust among themselves.
- As a group, farmers have a better bargaining power than as individual farmers.

Why do people join groups?
1. The following are some of the reasons why people join groups:

2. To satisfy the need to be associated with people having a common interest.
3. To enhance their feeling of security.
4. To enhance their social status.
5. To look for opportunities to solve their problems.
6. To look for opportunity to help others.
7. To avoid or escape boredom.
8. To be “in the crowd- friends and family members or fellow professionals Factors which enhance effective internal group dynamics.

Once people decide to come together they affect one another.
There are many factors which work together to enhance the effective internal group dynamics. These include:

1. **Cordial Atmosphere** - all groups should endeavour to create a cordial atmosphere within which each member of the group can function to the best of their abilities. There must be mutual respect, free exchange of ideas, trust, and comfortable physical surroundings.

2. **Free Flow of Communication** - it is important to keep open all channels of communication amongst group members.

3. **Participation** - group activities should be carefully planned to allow every member to participate. Participation creates motivation, satisfaction and commitment - a “WE” or “ÜS” feeling amongst group members.

4. **Fair (Unbiased) Group Standards** - the group should establish fair performance standards (rules for attending meetings, conduct of meetings, definition of the roles of elected officers, rewards, etc.) to guide group members’ behaviours. These standards should be clearly spelt out and communicated to all members of the group and must be evenly enforced.

5. **Distinct Group Identity** - as noted earlier it is desirable to create a “WE feeling” within the group. This common bound allows members to identify with the group and to care of each other’s interests and that of the group as whole.

**What is a successful or active group?**

A successful or active group is one that has members who are united, and work hard to achieve the goals why they came together.

**Some characteristics of a successful or active group:**

1. Provision of good supervision by leadership.
2. Operating of group bye-law.
3. Organization of a regular meeting.
4. Regular payment of group dues.
5. Let every member of the group know what the group expects of them.
6. Involvement of members in decision-making.
7. Ensure efficient communication within the group.
8. Keep members motivated and committed to work.
9. Educate members on issues affecting the well-being of the group. Ensure all members have been trained.
10. Concern and respect for every member’s views on issues relating to the group.
11. Understand and tolerate each other’s strengths and weaknesses.
12. Focus on improving positive qualities while working to remove negative tendencies.
13. Work to create an atmosphere of love, trust, honesty and security amongst group members.
Good Pre-Planting Operations

2.1 Selection of site

Objectives: To help farmers identify lands suitable for cocoa cultivation

Benefits or Expected Output: Farmers’ knowledge on suitable land for cocoa cultivation strengthened

Direction: The focus is on identifying a good site for cultivating cocoa

Materials required:
- Flip chart
- Soil samples: clay, sandy and loam
- Beakers,
- Jar of water
- Funnel
- Filter paper
- Pick axes, spades, shovels,
- transparent plastic containers (eg empty water bottles)

Preparations required
- Information on land selection and preparation in the Cocoa Manual
- A cocoa farm or farm land in a forest area
- Dig soil profiles on selected farms before the session.
- Assemble sample of soils of different texture and fertility.

Duration
- 2 hours

Procedure: Explanation, Demonstration, Exercise, Questions, Guidance

- Choose a suitable site or farm for exercise
- Explain the specific objectives and expected outputs
- Ask farmers what constitutes a good soil for cocoa cultivation
- Ask farmers to form groups to perform the following activities:
  - Ask one group to do experiment on water holding capacity and organic matter content of the different soil samples so as to indicate their suitability for cocoa cultivation. Take samples of the soil from each layer and feel them
  - Ask them to take a lump of soil put into a transparent container and add water to it.
  - Ask them how fast does the soil dissolve in the water?
  - Ask one group of participant farmers to test soil depth with cutlass. Is it deep, loose, clayey, rocky, sandy?
  - Ask another group to dig a soil profile to observe. Tell them how a soil profile looks like and ask the following questions:
Guide questions
i. How does the colour and structure change from the top soil down the horizons?

ii. How many distinct colours (layers) do you observe?

iii. How thick are the various layers?

iv. What living things or signs of them do you see in the different layers?

v. Why is the top layer darker?

vi. Which of these layers are important for plant nutrition?

vii. Is the top soil layer thick enough to provide good nutrition?

Summary: Summarise the importance of site selection

Question: Ask if anyone has a question

Evaluation: Ask participants what they have learnt and how useful they find the new knowledge

Benefits or Expected Output:
Promotion of better land preparation, lining, pegging, spacing and shade provision during establishment of cocoa farms

Direction: The focus is getting the right spacing and shade for the establishment of cocoa farms

Materials required:
- Flip chart
- Cutlass
- Felling Axes
- Measuring tape
- Wooden pegs
- List of desirable and undesirable shade trees (for both temporary and permanent shade)

Preparations required:
- Information on land preparation and shade management must be known
- Identify a land that is to be cultivated to cocoa
- Assemble wooden pegs
- Prepare list of desirable and undesirable shade species with their local names.
- Identify a land that is to be cultivated to cocoa for the demonstration of lining and pegging

Duration: 2.5 hours
Procedure: Explanation, Demonstration, Exercise, Questions, Guidance

a) Identification of desirable shade trees during land clearing and planting of temporary shade

- Gather the farmer participants together at one side of the chosen land
- Explain specific objectives and expected outputs of the exercise
- Make a quick appraisal of participant knowledge on land preparation and shade management
- Explain to participants the steps involved in land preparation
- Invite participants to discuss whether there is the need to have shade trees on cocoa farms.
- Ask participants to identify trees on the land noting their spatial arrangements.
- Invite farmers to mention, from their experience, which of the trees can serve as good shade for cocoa and their reasons.
- Compare their list with the prepared list of desirable shade trees and generate a discussion on what qualities are good for shade in cocoa and how many of the desirable trees should be left on 1 hectare farm.
- Generate a discussion on what could be done in the absence of the required number of trees on the land.
- Generate a discussion on why temporary shade would be needed in the farm.
- Generate a discussion on cautious use of fire when preparing the land.

The following qualities of shade could serve as a guide:

- Shade quality
- Moisture
- Soil fertility
- Weed suppression
- Mechanical damage
- Wind break
- Good aeration
- Good timber value

Guide questions for desirable trees

i. Does cocoa require shade at all?

ii. What are the types of shade needed (temporary and permanent)?

iii. Which trees are on the land (name)?

iv. What are they used for?

v. Which ones can serve as shade for cocoa and why?

vi. How many of them should be left on 1 hectare of land?

vii. How should they be distributed on the land?

viii. If they are too close, what should be done?

ix. If they are inadequate what can be done?

x. What species can serve as temporary
b) **Lining and pegging, spacing and holing**

- Generate discussion on the advantages of lining and pegging, proper spacing in cocoa farms and list the farmers’ views on them.

- On a clear piece of land guide farmers to undertake lining and pegging through use of 3-4-5 method.

- Explain the need for wide and deep enough holes for the seedling transplants.

- Explain the importance of separating the soil dug from the holes?

- Invite farmers to discuss when holes should be dug, how big the hole should be, and how long should they wait for before planting the seedlings.

**Guide questions for lining and pegging, spacing and holing**

- What happens when cocoa seedlings are planted too close?

- What is the appropriate spacing for cocoa?

- What are the advantages associated with lining and pegging?

- When is it appropriate to dig the holes for planting?

- How big should a hole be to contain a seedling?

- How long do you have to wait before planting in the holes?

**Summary:** Summarize the importance of land preparation, shade establishment, lining, pegging, spacing (3m×3m) and holing for transplanting

**Question:** Ask if anyone has a question

**Evaluation:** Ask participants what they have learnt and how useful they find the new knowledge
Objectives:

- To increase farmers’ awareness of factors to consider when selecting a site for a nursery
- To help farmers understand the need to source for pods from certified cocoa stations
- To help farmers understand the merits and demerits of using nursed seedlings.
- To help farmers identify type of nurseries for raising cocoa seedlings
- To help farmers to be acquainted with the steps involved with raising different types of nurseries.
- To encourage the use of healthy and well developed cocoa seedlings for field establishment.

Benefits or Expected Output

- Farmers’ knowledge in cocoa nursery establishment and management upgraded.

Direction: The focus is getting the right cocoa pods from certified source to establish nursery

Materials required

- Top soil
- Polythene bags
- Hand trowel
- Measuring tape
- Garden line
- Pick axe
- Watering can
- Cocoa pod
- Flip chart
- Well developed seedlings
- Spade
- Knives

Preparations required:

- Well prepared nursery site with palm frond or netting with seedlings in polythene bag and seed bed.
- Pre-established questions

Duration: 2 hrs

Procedure: Explanation, Demonstration, Exercise, Questions, Guidance

- Choose a suitable site for the nursery
- Explain the specific objectives and expected outputs
- Make a quick appraisal on farmers’ knowledge on nursery establishment
- Present the material by explaining the different types of nurseries, the steps involved in their construction and their merits and demerits.
- Divide the participants into 2 groups.
• Guide one group to construct a seed bed nursery and the other a poly bag nursery.
• Explain how to prepare poly bags for raising cocoa seedlings
• Ask each group to sow cocoa beans in the nurseries and water them
• Ask participants to share their experiences in planting at stake and using nursed seedlings
• Tell participants the need to protect the seedlings from insect and disease damage
• Show participants samples of healthy and well developed seedlings

• **Tell them hybrid seedlings:**
  • Establish easily
  • Early bearing (two years after transplanting)
  • High yielding
  • Have better resistance to blackpod and cocoa swollen shoot virus disease
  • Are highly resistant to mirid attack

**Guide questions**
• What do you have to look for when searching for a place to put up a nursery?
• Why is it important to get pods from approved seed source?
• What are the benefits of using nursed seedlings for establishing cocoa farms as opposed to planting at stake?

• What are the two methods by which cocoa seedlings can be nursed or raised?
• How do you construct a seedbed?
• In constructing the seedbeds what soil is the most appropriate and why?
• How do you prepare polybags for raising cocoa seedlings?
• What type of soil is used in filling the polybags and why?
• Why do we shade seedlings in the nursery and how are you going to shade them?
• After sowing how will you care for the seedlings up to the time they are ready for transplanting?
• Why is it necessary to harden seedlings before transplanting to the field?

**Summary:** Summarize the importance of nursery establishment, management, use of certified pods, and good seedlings for planting

**Question:** Ask if anyone has a question

**Evaluation:** Ask participants what they have learnt and how useful they find the new knowledge
4. Good Field Planting Practices

4.1. Planting cocoa in the field

**Objective:**
- To improve farmers’ skill in planting cocoa correctly in the field

**Benefits or Expected Output:**
- Farmers are able to plant cocoa seedling correctly in a dug hole

**Materials required:**
- 3-6 month old cocoa seedlings from the nursery
- Area of a cocoa farm which has been prepared for planting (by pegging and making planting holes)
- Spade or hoe preparations required
- Facilitator should be acquainted with information on planting of cocoa in the field at the start of the rainy season.
- Select a new site for a cocoa farming
- Existence of dug holes
- Pre-established questions
- Be ready at the start of the rainy season. Exercise be done on a cloudy day

**Duration:** 2hrs

**Procedure:** Explanation, Demonstration, Exercise, Questions, Guidance

- Gather the farmer participants together on the selected farm
- Explain the specific objectives and expected outputs of the exercise
- Invite farmers to discuss the merits of putting ‘dug topsoil’ on one side of the hole and putting the ‘dug bottom soil’ on the other side of the hole
- Invite farmers to discuss the merits of why a few days before planting the ‘dug topsoil’ must be put into the hole first, before putting ‘dug bottom topsoil’ on the top.
- Invite farmers to discuss the importance of watering seedlings heavily the day before transplanting.
- Engage farmers to discuss the steps they have to take to ensure the seedlings in a poly bag are properly planted once they are brought to site. (Removal of poly bags, removal of dead plants, putting of seedling with soil attached into hole, firming of soil)
- Invite farmers to discuss when it is appropriate to replace dead seedlings with new ones, and after what year should they not replace any seedling after establishment.

**Guide questions**

Before the farmer starts planting in the field

- Why do you have to put the “dug top soil” first in the hole and secondly follow with “dug bottom” soil?
- Why is it important to water the
seedlings the day before transplanting? On the day the farmer starts planting:

- When is it appropriate to plant cocoa in the field?
- Why do you have to remove the poly bags carefully from the seedlings before planting?
- Why do you have to throw away diseased seedlings?
- Why do you have to carefully place the seedlings with the soil in the holes?
- Why do you have to firm the soil put around the seedlings in the hole?
- After what period it is no longer good to replace dead seedlings and why?

**Summary:** Summarise the importance of site selection.

**Question:** Ask if anyone has a question.

**Evaluation:** Ask participants what they have learnt and how useful they find the new knowledge.

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### 4.2. Weed Management

**Objective:**

- To help farmers list and explain the importance of regular weeds management in cocoa.
- To help farmers mention and explain the different methods of weed management options for cocoa.

**Benefits or Expected Output:**

- Farmers appreciate the importance of weeds on a cocoa farm and its management.

**Materials required:**

- Cutlass
- Pneumatic spraying machines
- Herbicide (e.g., Glyphosate)
- Measuring cylinder, ‘Ideal’ milk tin
- Samples of weeds
- Flip charts

**Preparations required**

- Facilitator should be acquainted with information on weed management in the cocoa manual.
- Select cocoa farm for the training.
- Pre-established questions.
- Assemble sample of spraying machines, herbicides, cutlass, weeds.

**Duration:** 2 hours

**Procedure:** *Explanation, Demonstration, Exercise, Questions, Guidance*

- Ask farmers to do self introduction.
- Explain the specific objectives and expected outputs of the exercise.
- Invite farmers to discuss the effects of weeds on cocoa production.
- Ask participants to identify the weed samples and those on the farm and indicate how aggressive they are.
- Ask farmers to list the methods of weed control that they are aware of and whether they can be practiced in a cocoa farm.
• Invite farmers to discuss the merits and demerits of each weed control method mentioned.

• Demonstrate chemical weed control with the farmers actively taking part emphasizing the need to use only recommended herbicides and their correct dosages.

• Help farmers to be aware of the safety precautions when using chemical weed control.

Guide questions
• What are the effects of weeds on the growth and yield of cocoa?

• Why should weeds be removed in a cocoa farm?

• What are the names of some of the common weeds on cocoa farms (young and mature)?

• How many times a year should weeds be controlled in a young cocoa farm and why?

• How many times a year should weeds be controlled in mature cocoa farm and why?

• What weed control methods can be used in a cocoa farm?

• Why should you use the recommended herbicides and their dosages for weed control in cocoa?

• Why is planting of cocoa in lines necessary when chemical weed control is to be practised?

• Why should you avoid eating, drinking or smoking during harvesting?

Summary: Summarise the importance of weed management.

Question: Ask if anyone has a question

Evaluation: Ask participants what they have learnt and how useful they find the new knowledge

4.3. Soil erosion

Objectives:
• To discuss the importance of soil erosion prevention measures,

• To know how to scout for erosion risks on the farm

• To take measures to minimise the risk of soil erosion.

Benefits or Expected Output:
• Farmers are able to detect, monitor and know the causes of erosion
• Farmers are able to apply soil erosion prevention measures in their own farms correctly.

Direction: Tell farmers that during this session the focus is on soil erosion.

Materials required:
• A farm in the community with signs of erosion- sloping area preferable

• Small rocks, pieces of wood, bags with sand to block rill and gully erosion

• Bucket with water
• A one metre by one metre cleared land

Preparations required:
• Facilitator should be acquainted with information on soil erosion.
• Select cocoa farm with signs of erosion for the training.
• Pre-established questions.

Duration: 2 hours

Procedure: Explanation, Demonstration, Exercise, Questions, Guidance

• Ask participants what they do to protect their farms against rain and wind. Tell them that wind and rain can also damage the soil. Ask them if they know about areas on their farms where rain and wind has caused damage to the soil. Allow a few answers and remarks.

• Explain to the participants that soil consists of different layers. The top layer is very important and contains a lot of plant nutrients. During dry periods the soil cover is reduced. When the rain starts, the water starts to flow, loosens the top soil and moves it away to other places. This process is called erosion. Organic matter and important soil organisms and plant nutrients get lost with the running water. Without nutrients, crops will not grow.

• Tell participants that there are ways to control erosion. Ask them to join you to the field. Divide number of participants into two groups and ask each group to look around for traces of erosion or areas where there are risk of erosion.

Note for the trainer: During this exercise do not include your site with the 1 meter x 1 meter clearing.

• Let the groups walk around and observe for a few minutes. Then ask everyone to pay attention again and ask what they have seen. Together, look out for areas where erosion is visible and where there is a risk of erosion. Add the following:
  - The responsibility for erosion control and prevention is with the farmer.
  - The situation may change from season to season. Therefore it is necessary to inspect your field on a regular basis.
  - Prevention is better than cure.

• Tell the participants that you will demonstrate now how water can destroy soil. Take them to the two marked areas. First pour half of the bucket of water on the area covered with grass. Let them observe the effect. Then pour the remaining of the bucket of water on the cleared site. The water will run down and erosion will be visible. Let them observe the different effects.

• Ask participants what we can do to prevent erosion damage like the erosion just observed. Allow some answers and guide their answers to:
  - Leave grass and weeds on the field.
  - Build barriers from wood or stone.
  - Use bunds or trenches to stop water from running too fast.

• Tell participants that you will demonstrate how to prevent erosion damage. Let them form a semicircle
around the demonstration sites. Use the pieces of weed and rocks to demonstrate how a farmer can prevent erosion. Repair the damaged areas on the cleared site by putting grass and weeds on the field. Build a barrier of wood or stone or bags with sand, and use of bunds or trenches.

• Ask participants what else is important for prevention of erosion. If no answer is given, ask what will happen if the field is on a steep slope. The water can easily run off causing erosion. The steeper the slope the faster water will run. Therefore it is better to farm on relatively flat land or slopes that are not so steep.

Summary: Summarise the risks associated with erosion on cocoa farms.

Farmers can protect their soil by: Proper inspection of the farms to identify erosion risks, planting trees or grow other crops like cassava between cocoa trees, protecting or repairing areas damaged by erosion with wooden barriers, stone walls or bunds, and maintaining these constructions.

Question: Ask if anyone has a question or comment.

Evaluation: Ask participants: What are the main causes of erosion? How can we estimate the risk of erosion on our farms? What can we do to reduce the risk of erosion on our farms?

4.4. Soil fertility

Objectives:
• To discuss why soil is so important for growing cocoa.
• To discuss how to maintain the fertility of soils.

Benefits or Expected Output:
• Farmers will be able to know how to maintain the fertility of soil so that cocoa trees can grow well, produce more and good pods.

Direction: The focus will be on good and bad practices of soil management.

Materials required:
• Find a plot of land where you can show the difference between a poor soil and one that is rich in organic matter. The plot should contain: Soil under a mulch cover and naked (uncovered) soil.

Preparations required:
• Get a group of farmers to visit a farm for demonstration on soil fertility.

Duration: 1.5 hours

Procedure: Explanation, Demonstration, Exercise, Questions, Guidance

• Show farmers a handful of soil taken from a cocoa farm. (Ask them what is in the soil). In other words: what does soil contain?

Guide the answer to: minerals, organic matter, soil organisms, air and water. (Ask
if someone can give examples of minerals).

Guide the answer to: sand, silt, clay, stones, metals, diamonds, etc. (Ask if someone can explain what organic matter is).

Guide the answer to: Organic matter results from the decomposition of biomass. (Ask if someone can give an example of soil organisms).

Guide the answer to: Macro-organisms, such as earthworms, mites, spring-tails and termites, and micro-organisms (those we cannot see with the naked eye) such as bacteria, fungi and protozoa.

- Ask farmers how to they can describe a healthy soil and an unhealthy soil.
- Tell participants to focus on the unhealthy soil. Ask them what the farmer did that contributed to the unhealthy soil.

Guide the answer to intensive cultivation methods, deforestation, and excessive use of pesticides. (Ask for examples of intensive cultivation methods).

Answers can include deforestation, cutting of most shade trees, clean weeding (leaving no ground cover) and use of herbicides. (Ask if someone can explain what deforestation is).

Guide the answer to: deforestation is clear felling of natural forests without replanting them. (Ask what we mean with excessive use of chemical pesticides).

Guide the answer to: always spraying chemical pesticides without scouting and without looking for alternatives (add that we will discuss this in detail during the session Integrated Crop and Pesticide Management) and using the most hazardous pesticides (tell participants that we will discuss this in detail during the session on use of pesticides. Take your time to clearly explain all aspects to the group).

- Tell participants to focus on the healthy soil. Ask them what they can do to get such a healthy soil.

Guide the answers to: applying mulch, spreading cocoa husks under the trees, use of cover crops, and planting shade trees. (Ask participants if someone can explain what mulch is).

Guide the answer to: mulch is organic plant materials such as leaves, cocoa husks, straw and branches which decay to release plant nutrients into the soil. (Ask participants what type of materials are good for mulching).

Guide the answers to: weeds (without seeds), crop residues, cocoa husks, leaves, and residues from agricultural processing (palm oil). (Ask participants what a cover crop is and why it should be used).

Guide the answer to: a cover crop is a crop which spreads on the ground as it grows, e.g. cowpea, beans, and watermelon. Cover crops protect the soil against erosion caused by rain water run-off, against the heat of the sun, and they also suppress weeds. (Ask participants what good cover crops are).

Guide the answer to: leguminous plants, such as beans and peas that enrich the
soil. (Ask participants why planting shade trees are good).

**Guide the answer to:** they will protect the soil against rain and heat, increase the organic matter when shedding leaves, and create a healthy environment. (Seek advice from an extension agent as to which species of shade trees to plant).

- Ask the participants to follow you to the prepared plot. At the plot, tell participants that we are going to identify if soil is poor or if the soil is rich in organic matters. Tell participants to partner with someone and to compare the soil under a mulch cover with a naked (uncovered) soil. They should check for soil moisture, soil structure, organic matter, earthworms or other organisms. Give approximately five minutes to compare the soils.

- Ask which of the soil has more life and is healthier. Let a few groups answer and ask why the group thinks one soil is healthier. Do not comment on their answers. Tell participants which soil is healthier and tell them you will show them why. Every time you do a step, explain what you do and what you are looking for. Dig out carefully a leguminous plant (bean plant from a house garden) with lot of soil around the roots. Examine carefully the roots for nodules (small knots). The more nodules are found, the more nitrogen is produced, which is good for the soil. If you cut a nodule and find that the inside is reddish/orange, this means that the nitrogen-fixing bacteria are active. When they die, they release a lot of nitrogen into the soil. Add that there are also other bacteria and micro-organisms living in the soil which we can’t see but which also help the soil to be healthy and productive.

- Remind participants of what we have just discussed about soil organisms. Let every participant go through the soil to identify living organisms. Give them a few minutes. Ask participants what they have found. Tell participants that in the beginning of this session you asked them what to do with earthworms on the cocoa farm. Tell them you are asking the same question again: what to do with living soil organisms on their farms.

**Guide the answer to:** living soil organisms should be protected because they enhance soil fertility.

- Tell participants that the presence of earthworms is a sign for a fertile soil. Earthworms are very important for soil fertility as they contribute to the decomposition of biomass by removing dead plant material from the soil surface, mix organic and mineral soil particles and build stable crumbs, which help improve the soil structure. Their excrements contain five times more nitrogen, seven times more phosphate, eleven times more potash and two times more magnesium and calcium than normal earth. Their tunnels promote infiltration and drainage of rainwater and thus prevent soil erosion and water logging. A soil that is poor in organic matter does not provide food for earthworms, so the soil becomes poor.

**Guide questions**
- Are earthworms important in soils? Let them give reasons.
- What do you think a healthy soil should
• How will you describe an unhealthy soil?
• What factors contribute to the development of unhealthy soil?
• Why incorporate leguminous plants in your farm?

**Summary:** Summarise that a healthy soil is very important for growing cocoa trees.

- Cocoa farmers can apply mulch and use cover crops in particular beans to improve soil fertility. Intensive cultivation methods, deforestation and excessive use of chemical pesticides can lead to an unhealthy soil. To distinguish between poor soil and one that is rich in organic matters, farmers should watch out for the presence of earth worms and recognise soils which easily form balls in the hand.

**Question:** Ask if anyone has a question or comment.

**Evaluation:** Ask participants what they should do to get healthy soils. Ask them what they should not do. Ask how to distinguish between poor and rich soils.

**4.5. Fertilizer Application**

**Objectives:**
- To help farmers explain why cocoa needs certain nutrients.
- To help farmers to know the type of nutrients (N,P,K) to provide to the crop at different stages.
- To help farmers to identify the type of fertilizers that provides these nutrients.
- To help farmers mention the different types of fertilizers to apply to young/old cocoa.
- To help farmers know when and how to apply them and how to store and handle them.

**Benefits or Expected Output:**
- Farmers understand the nutrient requirements of cocoa at the different developmental stages for optimum performance.
- Farmers know which fertilizers supply these nutrients and when to apply them.
- Farmers acquire the skill of fertilizer application and its handling.

**Direction:** The focus is on fertilizer application and different types of fertilizers and its use.

**Materials required:**
- A board to affix pictures
- Flip chart sheets
- Tack pins
- Cellotapes
- Markers
- Selected farm
- Pictures/specimen of fertilizers, healthy and nutrient deficient plants/parts

**Preparations required:**
- Assemble pictures and/or specimen of cocoa plants showing different nutrient deficiency symptoms.
• Assemble pictures and/or specimen of healthy cocoa plants.
• Assemble specimen of fertilizers on the market (conventional, organic and foliar).
• Select farm with nutrient deficient and healthy plants.
• Knapsack sprayer.

Duration: 2hrs

Procedure: Explanation, Demonstration, Exercise, Questions, Guidance

• Choose a suitable location for the meeting.
• Explain the learning objectives and the expected outputs.
• Make a quick appraisal of participants knowledge on cocoa nutrient needs.
• Facilitate learning process with assembled pictures and specimen including farm visit.
• Take participants through the process of conventional, foliar and organic fertilizer application.
• Invite participants to apply the different types of fertilizer to cocoa plants.
• Tell participants that inorganic fertilisers are chemicals just as pesticides. Therefore, inorganic fertilisers need to be treated and stored with care. The following is very important when we handle or store fertilisers:
  • Do not apply more than the amount of fertiliser required as known from the result of soil analysis and the condition of the trees. Over-application of fertilisers is a waste of money. The trees will not grow better by applying more than what they need.
  • Store in a dry and locked place. If fertiliser comes into contact with moisture it will dissolve and lose it effectiveness.
  • Keep children and uninformed adults away from stored fertilizer.

Guide questions:
• What are the important nutrients for:
  - Young cocoa
  - Mature cocoa
• How does nutrient deficiency show up in cocoa?
• What types of fertilizers do you know of?
• What nutrients does each type contain?
• When do we apply these fertilizers? Why do we apply at the beginning of the rainy season?
• How much do we apply per unit area for:
  - Young cocoa
  - Mature cocoa?
• How do we store fertilizers?

Summary: With the harvest of cocoa pods, a lot of nutrients from the farm is removed, which need to be replenished with organic and/or inorganic fertiliser. Apply the right fertiliser at the right time, read
the label or seek advice before applying fertiliser. Apply fertilisers at the start of the rainy season, and again when pods start to develop.

**Question:** Ask if anyone has a question or comment.

**Evaluation:** Ask participants: What kind of fertilisers do you know? What are the best periods to apply fertilisers? How must we store fertiliser?

### 4.6. Integrated crop, pests and diseases management

**Objectives:**
- To promote farmers’ understanding of the concept and principles of integrated pest management (IPM) of cocoa insect pests.

- To promote farmers’ understanding of the principles of integrated pest management (IPM) of cocoa insect pests.

- To enhance farmers’ understanding of the practices of integrated pests management (IPM) and widen the scope to Integrated Crop Management.

- To enable farmers appreciate the steps needed for effective ICM.

**Benefits or Expected Output:**
- Farmers are able to apply preventive measures such as pruning and balanced use of agrochemicals to reduce the likeliness of diseases and pest outbreaks.

- Farmers are able to reduce spread of diseases by removing and burning diseased plant materials.

- Farmers are able to prune and remove chuponos to obtain optimal tree architecture.

- Farmers are able to know the different types of pruning and when to prune to achieve maximum crop yield prune at the appropriate period to achieve maximum crop yield.

- Farmers are able to monitor regularly pest and disease infestation levels in their fields.

- Farmers are able to continually reduce the use of agrochemicals for crop production.

**Direction:** The focus will be on key elements of integrated crop and pest management

**Materials required:**
- Flip-sheet board with flip-sheets
- Markers in different colours
- Masking tape
- Five sets of drawings depicting every step of ICPM (as in the hand out).

**Dissecting kit:**
- Tools for pruning
- Photographs of spraying gangs

- Table for displaying samples of pesticides including biologically based myco-insecticides and pheromone lures and traps
• Water, buckets, measuring cylinders etc
• Spraying machines and accessories
• Personal protective equipment

Preparations required:
• Coloured cards with all steps of ICPM (one step per card): Prevention; identification; diagnose severity; decision; treatment.

• A suitable cocoa farm with pests, diseases, weeds and other problems on one hand close to pests, diseases and weed free one for comparison.

• Prepare or use posters.

Duration: 2hrs

Procedure: Explanation, Demonstration, Exercise, Questions, Guidance

• Create awareness through stories, pictures, posters, discussion to inform farmers on management methods to enable them assist in the pest management process.

• Ask if someone can explain what ICPM is. Collect a few answers. Then say that ICPM uses all existing techniques to grow healthy crops and to control pests and diseases. It can help to control pests and diseases without interfering too much with the ecosystem. Explain what an ecosystem is.

• Tell farmers under the ICPM approach, farmers seek to keep a balance between ecological and economic aspects of farm management.

• Explain that various individual methods have been integrated into the concept of ICM
  - Cultural Control: The use of methods such as removal of chupons, excess branches, weeds etc.
  - Physical Control: This is the manual removal of insect pests such as caterpillars and their destruction. (SHOW SPECIMEN OF ANOMIS OR EARIAS CATERPILARS).
  - Chemical Control: This involves the use of approved insecticides to spray and kill insect pest species. However, the use of chemicals is being discouraged because of their negative effects on the environment. (SHOW SAMPLES OF APPROVED INSECTICIDES).
  - Biological Control: This involves the use of host specific insects (insects that feed on a particular insect species), pathogens (fungi, viruses and bacteria) and parasitoids (insects whose life cycle takes place inside the insect species and in the process kills the host (insect pest species)). (SHOW SAMPLES OF MYCO-INSECTICIDES).

• Tell farmers the key elements of integrated crop and pest management are prevention of conditions on the farm that favour pests and diseases; quickly identifying the pest or disease and assessing the level of infestation; and then treating according to the severity of the problem.

Some of the preventive measures include:

a. Selection of planting material: Select disease-resistant varieties from the
b. **Sanitary harvesting:** Regularly remove diseased pods that may be a source of infection for other cocoa trees. Inspect cocoa fields at the start of the rainy season and after rains; check for pods with black pod symptoms and old, black pods (mummies). Collect and burn them.

c. **Plant nutrition:** Improve and maintain soil fertility and apply organic and mineral fertiliser if necessary to have healthy plants which can better resist pest and disease attack.

d. **Removing chupons:** Chupons are new branches that grow on the stems of the cocoa trees. Chupons should be removed because they take food, water and energy from the tree, which reduces production. In addition, chupons can serve as food for parasites. Cut chupons off close to their base. Using a shape machete, make a “clean” cut at an angle. When the original stem is not healthy, you may decide to allow a new chupon to grow and develop into a new trunk.

e. **Removing moss:** When pruning and weeding the farm, remove moss and mistletoe because they weaken the cocoa tree and reduce the yield.

f. **Pruning:** Removal of unwanted branches to allow free air flow in the cocoa.

**Guide questions:**
- What is meant by IPM or ICM concept? (a definition of the concept based on FAO as in the Cocoa Manual).
- What pest management methods do they know or recall from previous discussions of management of cocoa pest?
- What is meant by judicious or rational use of pesticide in the definition of IPM or ICM?
- Why is the non use of any of the methods an option in ICM?
- Why is the use of cultural practices such as weeding, pruning, field hygiene, shading of farms etc very important in ICM?
- Introduce farmers to use AESA as a decision making and monitoring tool for insect pests species.

**Summary:** Summarise all steps of ICPM.

**Questions:** Ask if anyone has a question or comment.

**Evaluation:** Ask participants what the steps of ICPM are. Ask the group what they need to do on their cocoa fields.

4.7. **Management of insect pests on cocoa**

**Objectives:**
- To assist cocoa farmers to identify the various (insect) pests and symptoms of their damage to the crop at its various developmental stages.
- To assist cocoa farmers to have the relevant knowledge of both the major and minor pests of the crop at its various developmental stages (nursery, establishment and...
maintenance stages).

- To enhance farmers’ adoption of recommended pests control measures.
- To enhance efficient management of the pests for increased yield.

**Benefits or Expected Output:**
- Farmers’ knowledge of techniques for cocoa pest management enhanced.
- Farmers’ enabled to choose from options of control measures based on informed judgment.
- Farmers’ knowledge in food safety based on low pesticide residues enhanced.

**Materials required:**
- Sample bottles.
- Dissecting kit with knives.
- Photographs of insects and damage plant parts.
- Table for displaying specimens.
- Bottles or sachets of approved insecticides for cocoa.
- Motorised and pneumatic spraying machines.
- Water, buckets, measuring cylinders etc.
- Personal protective equipment.

**Preparations required:**
- Get a group of cocoa farmers (male and female, young and old) selected from operational area for participatory learning.
- Let them form at least two sub groups if group is too big to ensure effective learning.
- Specimen boxes with insects associated with cocoa especially predators, parasitoids etc.
- Life specimen of mirids, stink bugs, termites, stem and pod borers (moths and caterpillars), defoliators (caterpillars), grasshoppers, meallybugs, aphids, psyllids etc.
- Damaged chupons, defoliated seedlings, cut seedlings from termite damage, premature ripened pods, trunks with exit holes of stem borers, pods with frass of pod borers.

**Duration:** 3hrs

**Procedure:** *Explanation, Demonstration, Exercise, Questions, Guidance*

- Choose a suitable place with shade under cocoa farm selected by the community.
- Mount the specimens on the table and the photographs on pin board.
- Explain the objectives and expected outputs for the meeting to the whole group.
- Divide the group into two subgroups making sure that females and young farmers are represented equally in the two sub-groups.
- Give each group about 15 minutes to view the materials/specimen, mount and select one person in their midst to explain the status of each insect specimen under categories of major pest, minor pest, emerging pest, beneficial etc.
- If a group faces some difficulties in the
identification and explanation of any insect specimen give a chance to any of the opposite group members to try. If none of the groups is able to give correct answers the facilitator then fills in the gaps in the form of a lecturette.

- Explain Agro-Ecosystems Analysis (AESA) as a tool for decision making on the choice of an option for control measures.

- Assign each group a task to take a transect walk along the diagonals of a cocoa farm, for about 20 minutes collecting samples of insects and their damage especially mind lesions on chupons, premature ripening of pods by stink bugs.

- Bring all collected samples back to shade where the discussions begun.

- With the help of knives from the dissecting kit cut open branches, stems and pods collected as samples to expose associated insects such as stem and pod borers etc.

- Remove any associated insects especially stem and pod borers.

- Assign each group to brainstorm and present the methods used in the management of the key pests such as mirids, stink bugs.

- Fill in the gaps, and explain the recommended methods used in the management of major cocoa pests i.e biological, chemical, cultural, integrated crop management (refer to cocoa manual).

- Demonstrate the mixing of approved insecticide, filling of solution tank, fuelling motorised fuel tank, mounting of sprayer on the back and techniques of spraying young and mature cocoa.

- (Let each group demonstrate spraying techniques with motorized mistblower and pneumatic spraying equipment).

- Stress the safety precautions required for spraying cocoa.

- Ensure that each member of each group is able to demonstrate the safety precautions especially the use of personal protective equipment often referred to as protective clothing.

Guide questions:
To further probe their level of understanding of pests management methods pose the following guided questions:

- Mention any insect associated with cocoa?
- Do all insects cause harm to cocoa?
- What level of damage can the insect you know do to cocoa?
- Is this insect a major, minor or emerging pest?
- What is the importance of cultural methods such as weeding, pruning and farm hygiene to pest control?
- Do you know of any insect on cocoa which does not harm the plant?
• How do we control the pest?
• Do you know at least one insecticide which controls your major pest?
• How do we use the insecticide you mentioned on cocoa?
• How do we mix the insecticide in the spraying tank?
• Why do we need to put some water first into the spraying machine before we add our insecticide?
• What should we avoid when spraying insecticides?

Summary: Summarise importance of major and minor pests in cocoa production and their control.

Questions: Ask if anyone has a question or comment.

Evaluation: Ask participants what went well and what did not. Lessons learnt. Ask the group what they need to do on their cocoa fields.

4.8. Management of cocoa diseases (A)

Objectives:
Assist farmers identify the various types of cocoa diseases, their pathogens, their mode of spread and the effect on the cocoa tree as well as the possible remedies available.

Benefits or Expected Output:
• Farmers awareness of the impact of the diseases and why prompt actions is always required enhanced.
• Farmers will have improve knowledge on cocoa diseases.
• Choice of options for the management of cocoa diseases based on informed judgement will be made available.

Direction: The focus is only on type of diseases identification and their effects on cocoa.

Duration: 1.5hrs

Materials required:
• Teaching aides e.g. slides/flyers/module structure.
• Photographs of symptoms of cocoa diseases.
• Photographs of alternative host plants.
• Life specimens of cocoa tissues infected with the cocoa diseases.
• Pictures of replanted farms with barriers of non-host plants such as citrus or oil palm.
• Cocoa farms with life samples of various disease.

Preparations required:
• Teaching aides including glossy pictures of symptoms of the various cocoa diseases in an infected cocoa plant, pictures of alternative host plants which must be noted and removed from all cocoa farms and pictures of parasitic epiphytes such as mistletoes.
• Pictures of rehabilitated CSSVD
controlled farms which have barriers of citrus, coconut or oil palm planted around them.

Procedure: *Explanation, Demonstration, Exercise, Questions, Guidance*

- Choose a suitable place with shade under cocoa farm, but should be near an infected cocoa where life specimens of the various cocoa diseases can be shown to the farmers.
- Put the specimens on the table and mount the photographs on pin board.
- Explain the objectives and expected outputs for the meeting.
- Show materials/specimen mounted and explain the status of each pathogen/vector under categories of major diseases and minor ones in the form of lecturette.
- Using the knife split open cocoa pods to show the effect of the pod diseases on cocoa.
- Discuss Agro-Ecosystems Analysis (AESA) as a tool for decision making on the choice of an option for control measures.
- Take participants through cocoa farm to let them find symptoms of diseases of cocoa and explain to them how the pathogens that cause these symptoms affect the growth and development of cocoa.

**Guide questions:**
- What are some of the diseases that affect your farm?
- Why is it necessary to identify diseases on their farms?
- List some of the effects of disease attack on cocoa?

**Summary:** Summarise the type of diseases and their mode of spread.

**Questions:** Ask if anyone has a question or comment.

**Evaluation:** Discuss with the participants whether the objectives of the interactions were met. Identify gaps in knowledge and address them.

4.9. Management of cocoa diseases (B)

**Objectives:**
- Describe recommended methods used in the management of major cocoa diseases and to make appropriate choices.
- Help farmers to practise the full techniques and process of fungicide application/spraying.
- Help farmers to practise the full techniques of using aborecides to kill cut-out cocoa trees.

**Benefits or Expected Output:**
- Farmers will acquire effective techniques for managing cocoa diseases.
- Farmers will witness the process of cutting cocoa or any other tree and then killing the left trunk with aborecide e.g. garlon-2 or garlon-4.
• Farmers will experience the skills/techniques/process of fungicide spraying/application.

**Direction:** The focus is only on type of techniques in managing the diseases.

**Materials required:**

**For Demonstrating CSSVD control:**
• An axe or chain-saw machine
• Aborecide or tree-killer e.g. garlon-2 or garlon-4.

**Control of minor diseases caused by fungi:**
• Machete or cutlass
• Go-to-hell or cocoa plucker
• Recommended fungicides

**Control of blackpod:**
• Recommended fungicides
• Knapsack sprayer
• Water for mixing fungicides
• Protective clothing
• Gloves
• Goggles for protecting eyes

**Control of mistletoes and other epiphytes:**
• “Go-to-hell” or cocoa plucker
• Machete or cutlass

**Preparations required:**
• A CSSV infected cocoa that has been surveyed and ready for treatment.
• Cocoa farms with symptoms of minor cocoa diseases.
• Cocoa farms with cherelles in a blackpod endemic area (i.e. blackpod caused by *Phytophthora megakarya*).
• Cocoa farm infested with mistletoe or other epiphytes.

**Duration:** 1 hour for the control of each disease or epiphyte (and there should be enough break between each disease treatment).

**Procedure: Explanation, Demonstration, Exercise, Questions, Guidance.**

• Explain the recommended methods used in the management of major cocoa diseases (CSSVD and blackpod) i.e. biological, chemical, cultural, integrated crop management (refer to cocoa manual).

• Demonstrate the mixing of approved fungicides, filling of solution tank, mounting of sprayer on the back and techniques for spraying fungicides onto the cocoa pods to protect them (refer to cocoa manual as necessary).

• Stress the safety precautions required for spraying cocoa.

**For CSSVD control:**
• Choose cocoa farm with obvious CSSV symptoms that has been surveyed and ready for treatment.

• Demonstrate the techniques of treatment i.e. cutting out of visibly infected trees and their neighbouring contact.

• For 1-10 visibly infected trees, 5 metre radius of contact trees should be removed.

• For 10-100 visibly infected trees, 10 metre radius of contact trees should be removed.
• More than 100 visibly infected trees, then a 15 metre radius or the whole cocoa farm should be destroyed (i.e. depending on the distribution of the infected trees in the entire farm).

• Explain that where cutting out is done with an axe or chain-saw machine, the left over trunks must be killed with either garlon-2 or garlon-4.

• The mixing of the chemical with an appropriate solvent must also be explained and demonstrated.

• The replanting of the cut-out field with improved hybrid cocoa or cultivars must be emphasised.

• Where and how to get these hybrid cocoa hybrids for replanting must also be explained and taught.

**Control of epiphytes (e.g. mistleloes) and minor diseases caused by fungi:**

• Stress on how the maintenance of proper farm sanitation can minimise or reduce epiphytes infestations as well as reduce or prevent minor diseases of cocoa.

• Demonstrate how a machete or go-to-hell can be used to cut-off mistletoes or other epiphytes from the stem of a cocoa plant.

• Demonstrate how cocoa tissues affected by minor diseases can be cut-off and disposed out of the cocoa farm.

• Also explain that in the extreme cases, fungicides recommended for use in cocoa can be used to control minor diseases of cocoa caused by fungi.

• Proper mixing and application of the requisite fungicide should be demonstrated or taught (refer to cocoa manual).

**Control of blackpod disease.**

• Explain how the pathogen, *Phytophthora megakarya* or *Phytophthora palmivora*, causes blackpod disease in cocoa.

• Explain how the fungicides being used work to control the disease in cocoa.

• Explain that current fungicides are sprayed as a protective cover against the fungus. That is why spraying should start when the first cherelles are formed i.e. between May and June.

• Explain that spraying should be aimed at covering the whole pod with the fungicide i.e. every pod on the tree should be coated/covered with the fungicide during spraying.

• Explain that as the pod matures, new growth of the pod, which were not there during the previous spraying will become exposed, and hence vulnerable to the disease.

• To prevent the pathogen or the seed of the disease from growing on the exposed parts, subsequent spraying should be done.

• To cover this new tissues, hence the need to do follow up spraying until the pods are matured.

• The need for subsequent monthly sprayings after the initial one, must continue until the pods are matured.
Demonstrate the proper mixing of the recommended fungicides in a knapsack sprayer.

Demonstrate proper spraying on the cherrelle in a cocoa farm i.e. spray pod by pod until all the cherelles are well-covered or coated with the fungicides. At all times, ensure that the exact recommended dosages are used.

Ensure protective clothing, goggles and hand gloves are used all the time that spraying is done.

Explain the harmful effects of such chemicals on man and why these clothing are to be used.

Guide questions:
- Why is it important to control CSSVD, fungus and epiphytes on your farms.
- How do you control these diseases?
- What precautions do you have to take in handling chemicals?

Summary: Summarise various methods for controlling diseases in cocoa.

Question: Ask if anyone has a question or comment.

Evaluation: Ask participants: How will you voluntarily control diseases on your farm?

Benefits or Expected Output:
- Farmers able to mention the need to prune cocoa farms.
- Farmers should be able to prune both young and mature cocoa trees.
- Farmers should be able to remove mistletoes/other epiphytes in mature cocoa trees.
- Farmers able to mention why proper shade levels should be maintained in a cocoa farm.

Direction: The focus will be on pruning and management of shade

Materials required:
- Standard pruner
- Cutlass
- Samples of chupons and mistletoes
- List of desirable and undesirable shade trees (for both temporary and permanent shade).
- Cocoa farms (young and old) that needs pruning and shade management for the training.

Objectives:
- To help farmers mention and explain the merits of pruning/training, mistletoe removal and shade management in cocoa.
- To help farmers describe the steps involved in the proper pruning/training of cocoa.
- To help farmers mention the importance of proper shade levels in cocoa.
- Management in the Cocoa Manual.
- Select cocoa farms (young and old) that needs pruning and shade management for the training.

- Pre-established questions.

- Prepare list of desirable and undesirable shade species with their local names.

- Assemble sample of mistletoes and chupons.

**Duration:** 2hrs

**Procedure:** *Explanation, Demonstration, Exercise, Questions, Guidance*

**Pruning:**
- Gather the farmer participants together on the selected farm.
- Explain the specific objectives and expected outputs of the exercise.
- Invite farmers to discuss the merits of pruning in cocoa and the presence of chupons on production.
- Why should the branches to be removed during pruning cut in a slant manner?
- Guide the farmers to prune both a young and mature cocoa.
- Ask participants where and how to prune. Guide them towards the following answers and point to the concerned parts of the cocoa tree when something is mentioned:
  - **Skirting:** Remove the low and drooping branches and open up the underside of the tree.
  - **Height control pruning:** Prune at the growth point of the plant to keep the height at about 2.5 - 3m.
  - **Tipping:** Remove branches that are growing into the canopy of neighbour trees.
  - **Internal pruning:** Cut out branches growing on the inside of the canopy and remove over-shaded branches and dead wood.
- Invite farmers to assess what they have done as regards pruning and chupon removal.

**Shade management**
- Generate a discussion on the merits of proper shade levels on cocoa farms.
- Ask participants to identify trees on the farm noting their spatial arrangements.
- Invite farmers to mention, from their experience, which of the trees can serve as good shade trees for cocoa and give their reasons.
- Compare their list with the prepared list of desirable shade trees.
- Explain to farmers excess shade and adequate shade.
- Invite farmers to mention the characteristics of adequate and excess shade.
- Generate a discussion on how many of the desirable trees should be left on 1 hectare farm.
- Generate a discussion on what should...
be done when there is over-shading.

**Guide questions:**

**Pruning**
What is the importance of pruning in cocoa?

Why should chupons be removed?

At what age should we start pruning cocoa?

What is the effect of mistletoe on cocoa tree?

When are they normally present in a cocoa farm and how can they be detected?
Why should the branches to be removed during pruning cut in a slant manner?

**Shade management in cocoa**
What is the importance of shade in cocoa cultivation?

Which trees are good for shade?
How many should be left on one hectare of land?

**Summary:** Summarise issues related to pruning and shade management.

**Question:** Ask if anyone has a question or comment.

**Evaluation:** Ask participants what they have learnt about pruning and shade management.
Cocoa Rehabilitation

5.1. Cocoa rehabilitation

Objectives:
- To help farmers understand the importance of replanting.
- To help farmers know when to replace old cocoa trees with new ones.
- To help farmers know how to select and plant new seedlings correctly.

Benefits or Expected Output:
- Farmers will know the criteria for replacing old or unproductive trees.
- Farmers will adopt a cocoa planting distance of 3m x 3m (10ft x 10ft) for pure stands.
- Farmers will use improved planting or grafting materials from Seed Production Division.

Direction: The focus will be on need for replanting, importance of proper spacing and use of improved seedlings AND not how to line and peg and plant seedlings.

Materials required:
- Markers (at least one black, one green and one red).
- Flip-sheets.
- A good seedling.

Preparations required:
- Select an old and moribund cocoa farm for discussion
- Select a well planted farm for discussion

Duration: 1hr

Procedure: Explanation, Demonstration, Exercise, Questions, Guidance

- Ask participants how many eggs a chicken lays per day. Collect a few answers. Ask them what they would do with the chicken if it only lays one egg per week or one egg per month. The chicken would probably end up as chicken soup. Tell participants that farmers would replace a chicken immediately when it is not productive anymore but when the production of a cocoa tree is going down, farmers are very reluctant to replace the tree.
- Ask the participants how many pods we can expect from a healthy cocoa tree per year. The correct answer at least 25 pods. Ask them what will happen if the number of pods decreases to ten pods per year. Guide their answer to the fact that they will have less than half of the normal yield. Ask participants what they do with the cocoa pods they harvest from the trees. They will answer that they sell them. Ask what it means if their yields are cut in half. This means that their income will be reduced by half as well. Refer to the drawings on the poster with the cocoa trees (one drawing with a cocoa tree with many pods and one tree with only a few pods with a cross next to it). Add that a tree also needs to be replaced or grafted when older than 30 years.
• Ask participants who have replaced or grafted cocoa trees to share their experience. It is likely they will mention diseased condition (CSSV infection), old age, and unproductiveness of their farm.

• Where CSSVD infection is involved refer them to the nearest Cocoa Health and Extension Division office for professional advice.

• Ask participants what we can be done replace an old cocoa tree. Guide their answer to planting new seedlings. Tell them that there are different types of seedlings. Explain the following sources of seedlings:

  - Seedlings from naturally pollinated seeds. This is what most farmers use. This must be discarded.

  - Seedlings from certified CRIG hybrid seeds (can be obtained at the Seed Production Division of Ghana Cocoa Board in the districts.). Refer to section on good field planting practices.

• Ask them to join you in a semicircle. Show them a good seedling from Seed Production Division. Tell them that a good cocoa seedling needs to be:

  - Between three and six months old
  - Is two leaf-storey
  - Has rigid stems
  - Is reasonably free of visible signs of pests and diseases.

• Tell the participants that selecting good seedlings is not enough to ensure optimum results. The planting of seedlings is equally important. Ask them to join you in the field because you will demonstrate how to plant a seedling correctly.

• Plant the seedling according to the following recommendations. Explain in detail each step as you plant the seedling. Refer to planting of seedling section.

  - Transplant seedlings when they are three to six months old.

  - Dig big planting holes at a spacing of 3m x 3m (use measuring tape).

  - Cut the bottom of each plastic bag by using a sharp knife.

  - Place the seedling in the hole and gradually pull out the plastic bag. When pitting, top and bottom soils are separated and on refilling the pitted hole, top soil is put first in order to make the roots benefit from the most fertile part of the soil.

  - Gently firm the soil around the base of the seedling.

  - Water the seedlings after planting.Use disease free organic matter to mulch the surface.

• Show the drawing and tell them that if the seedlings are planted in the correct way, the yields will be higher and the farmer will make more money.

• Ask the participants what they know about grafting to rehabilitate a cocoa farm. Inform them that grafting is an important regeneration method, by which a shoot from a healthy, high-yielding tree or from improved material
is taken and grafted onto a chupon of a non-productive tree. Grafting should be practised by trained and experienced people.

**Guide questions**

**Why do we have to replace diseased trees (CSSV infection), old and moribund farms?**

- Why do you have to use improved seedlings?
- What are the characteristics of a good seedling?
- Why is it bad to use seeds from a neighbour's farm to plant your farm?
- What is the importance of planting such improved seedlings in line?

**Summary:** Tell them about the need for replanting and the criteria for replacements. Stress the importance of good quality seeds and explain the steps on how to plant seedlings.

**Question:** Ask if anyone has a question or comment.

**Evaluation:** Ask participants how we know if a cocoa tree is unproductive. Ask how we can ensure that we replace the old trees with high-quality seedlings. Ask what the correct spacing is between seedlings.
Good Harvesting and Post-harvest Management Practices

6.1. Harvesting, pod breaking, fermentation and drying

Objectives:

- To update farmers’ knowledge and skills on pod harvesting and breaking practices in cocoa.
- To help farmers understand the processes involved in fermentation and improve their knowledge on the different methods of fermentation.
- To help farmers appreciate the influence of proper harvest and post-harvest handling on cocoa flavor development.
- To enhance farmers’ understanding of drying and storage processes and its implications for quality in cocoa.
- To help farmers assess flavor quality of their own beans through sensory evaluation.

Benefits or Expected Output:

- Farmers are able to use appropriate storage facilities to store their cocoa.
- Farmers appreciate the influence of harvest and post-harvest practices on cocoa flavor development enhanced.

Direction: The focus will be on harvesting the right pods, pod breaking, fermentation and drying.

Materials required:

- Flip charts, markers, papers, cards, stickers, charts, posters.
- Small cards with numbers.
- Small empty pieces of papers.
- Non-sharpened cutlasses, sickle-shaped knives on long poles, wooden clubs.
- Plastic bowls (l/s), baskets, fermentation boxes and trays.
- Plantain leaves and small logs, drying mats.
- Logistics for sensory analysis: Prepare or obtain from CRIG, reference liquors made from unripe pods, black pod infected beans, moldy beans, unfermented, under-fermented, well-fermented and over-fermented cocoa. The liquors must be kept in a cooler to avoid melting. Have water available for participants to drink.
rinse their mouths after tasting.

- Four to five real pods in different stages (not ripe, almost ripe, ready to harvest, over-ripe).

**Preparations required:**

- Trainer must review the section on pod harvesting and breaking, bean fermentation, drying and storage, and bean quality assessment in the cocoa manual.

- Trainer must review notes on sensory evaluation.

- Trainer must taste and familiarize him/herself with each cocoa liquor to be used for the training.

- Select:
  - Cocoa farm with different stages of pod ripening for demonstration of harvesting and the farmer should be ready for harvesting (or use demonstration farm or cocoa station).
  - Suitable area with shade for pod breaking and fermentation.
  - Suitable area for sun drying.
  - Suitable storage area.
  - On the day of training put the different cocoa pods harvested on a table in front of the group with the numbers in front of them. You should not put the pods in a specific order.

**Duration:** 5 hours

- Discussion on harvest, post-harvest handling and challenges - two hours.

- Effect of harvest and post-harvest handling on flavour development (must be done the next day)- one hour.

- Demonstration and practice on sensory evaluation where participants will taste cocoa liquor of various flavours and will be taught how to determine deficiencies in flavor and good flavour.

**Procedure: Explanation, Demonstration, Exercise, Questions, Guidance**

**First Day: Discussion on harvest, post-harvest handling and challenges**

Lead farmers to discuss how harvesting, pod breaking, fermentation, drying and storage in cocoa are done using guided questions:

If on the farm, show farmers how the ripe pods are harvested from the tree without destroying the cushions or show a picture to that effect.

Now, invite all participants to the front to have a good look at the cocoa pods (or drawings/pictures) on the table. Give everyone enough time to closely observe all cocoa pods (or drawings/pictures). Tell them they are going to give reasons for selecting a particular pod as being ripe for breaking and fermentation.

- Start with the first pod (fully or partly green). Ask those who support such pods and the reasons for choosing. Tell participants that when pods are fully or partly green, they are not ready for harvesting. Ask what the
consequences are if you harvest the pods too early. Guide the answer to that the beans inside the pod will be harder to remove from the pod. Such beans give poor taste when made into chocolates. More so, beans in unripe pods are smaller and will give low yield.

- Go to the second, third and fourth pod and discuss them in the same way. Repeat that when pods are fully or partly green, they are not ready for harvesting.

- Go to the last pod and discuss in the same way. This pod is ready for harvesting (it is ripe with the appearance of a yellow pod colour).

- Ask participants what you should do first. The correct answer is: Break the pod with a non-sharpened steel blade or wooden club and twist the pod open. When someone gives the correct answer, repeat the answer and show how to do this. While you are demonstrating how to break the pod and twist it open, explain what you are doing.

- Ask participants what to do next. The correct answer is: Discard the placenta, the pulp and all soft / empty / germinated or damaged beans from the mass. The placenta needs to be discarded before fermentation in order to allow all beans to ferment equally. The placenta can be used as mulch. When someone gives the correct answer, repeat the answer and show how to do this. While you are demonstrating how to discard the placenta, pulp and the bad beans,

- Ask participants what to do next. The correct answer is: Fermentation of the beans. Ask how to do this. When someone gives the correct answer, repeat the answer and show how to do this. Put the beans on a plantain leaf and cover the heap with plantain leaves. Ask why you should cover the beans with plantain leaves. Guide the answer to that plantain leaves maintain the heat and reduce the formation of moulds. Ask if we can use plastic to cover the beans. Guide the answer to: No, we cannot use plastic because it will not allow water to easily drain from the beans. Ask how many days the beans need to ferment. Guide the answer to: six to seven days. Add: Turn the bean mass to distribute heat uniformly and to allow entering the mixture.

- Ask what to do after fermentation. The correct answer is to place the beans on drying mats that are raised. Ask why the beans should be placed on raised drying mats. This is to ensure adequate air circulation in the sun. Ask if you can use wood fire to dry the beans. The correct answer is no, because it releases smoke that will contaminate the cocoa. The beans should be dried for at least seven days.

- Discuss with participants the two methods of drying, their advantages and disadvantages.

- Discuss with farmers the importance of good storage facilities.

- Let the participants repeat all the steps that need to be done after harvesting:
Break the pod with a non-sharpened steel blade or wooden club and twist the pod open.

- Discard the placenta, the pulp and soft/empty/germinated/damaged beans from the mass.
- Ferment the beans using plantain leaves.
- Turn the beans every two (2) days.
- Put them on drying mats.
- Ask how you know if the beans are properly dried. Guide the answer to: *A properly fermented and dried bean looks brown in colour when cut in half*. In addition, when a handful of well dried beans are squeezed, they make a cracking sound and snap when broken.

- Ask participants to form pairs. Give each pair some cocoa beans. Ask participants to check if these beans are well fermented and dried or not. Let participants work on their assignment. Walk around to check if participants test the beans in the correct way and if they can indicate if beans are well fermented and dried. If many participants have problems recognising the well fermented and dried beans repeat how this can be checked and show a few examples.

- Finally, add the following points:
  - Ferment, dry and store cocoa beans properly to make them reasonably free of foreign matter and odours.
  - Dry cocoa beans on raised platforms to keep the beans out of contact with soil and away from roads.
  - Package dried beans in clean jute bags that are sufficiently strong and properly sewn or sealed.
  - Store the cocoa away from sources of contamination such as agrochemicals, fuel, flammable substances, or smoke.
  - Store cocoa beans in dry places during loading and transportation.

**Second day**

*Effect of harvest and post-harvest handling on flavour development- One hour.*

- Recall discussions held the previous day on harvest and post-harvest handling of cocoa
- Introduce farmers to the importance of cocoa flavor in the cocoa industry
- Discuss with farmers the influence of each single step of harvest and post-handling on flavor development

**Sensory evaluation- Two hours**

- Take farmers through sensory evaluation and discussion of cocoa flavor attributes
- Teach farmers how to chew the liquor to achieve uniform spread in the mouth
- Let farmers taste the liquors starting with the best quality (well fermented) to the worst (black pod infected)
• Let farmers wash their mouth with water thoroughly after each tasting session

• Discuss the flavor attributes of each liquor before tasting the next.

• Allow about 10 minutes between tastings so that after-taste bitterness could be reduce.

• After the tastings let farmers share their experiences and lessons learnt.

Guide questions:

i. How do we harvest cocoa pods on the tree?

ii. At what stage of pod ripening should you harvest?

iii. How often do you do harvesting?

iv. What tools do you use in harvesting?

v. Why do you have to remove the placenta?

vi. Why do we need to ferment cocoa?

vii. How do you ferment your cocoa?

Summary: Summarise the steps during and after harvesting and its implications on flavor development.

Question: Ask if anyone has a question or comment.

Evaluation: Ask participants why it is important to harvest at the right time. Ask what the consequences are if pods are harvested prematurely or when they are over-ripe. Ask participants what steps they need to take after harvesting. Ask for every step, why they should do it in that way. Ask why flavor development is important.

6.2. Assessment of cocoa bean quality

Objectives:

• To help farmers understand the cocoa bean quality, factors affecting it and how it can be assessed.

• To make farmers aware of the implication of not meeting quality standards.

Benefits or Expected Output:

• Farmers’ Knowledge on cocoa bean quality will be enhanced.

• Farmers will know how to produce good quality so that their beans will not be rejected.

Direction: The focus is on how to distinguish the good quality beans and the various forms of defective beans.

Materials required:

• Flip charts, markers, papers, stickers.
• markers
• papers
• stickers
• knives
• Charts and containers of recommended agrochemicals.
• Samples of cocoa beans (at least 50) with different defects.
• Sample of good quality cocoa beans (at least 10).

Preparations required:

• Arrange the beans in groups of five to
six beans. Make sure that every handful of beans contains one good quality bean and that the bad beans show different defects. These should include samples of dried well-fermented, under-fermented, and over fermented, insect-infested, mouldy, slaty, shriveled cocoa beans (sourced from the nearest QCC office and farmers’ drying points).

- Suitable area with shade for quality estimation.
- Assemble recommended agrochemicals used in cocoa (empty containers are okay).

**Duration:** 3 hours (Discussion – one hour; demonstration and practice – two hours).

**Procedure:** *Explanation, Demonstration, Exercise, Questions, Guidance*

1. Show participants cocoa beans of different qualities. Split them in groups and give each group a handful of beans. Ask them to discuss the bean quality.

2. After five to ten minutes ask everyone to pay attention. Ask the first group if they found some beans of lesser quality. Ask them why the bean is of poor quality. Only ask for one answer. Write their answer on a flip-sheet (even if participants are illiterate, you should write it down to keep track of the answers). Ask the group to show the bean they are referring to, so everyone can clearly see what is wrong with the bean. Ask if other groups have a similar bean. Make sure that everyone has clearly seen the bean and knows why this bean is of poor quality. Add information if necessary.

3. Go to the other groups and follow the same procedure until all groups have given their input.

4. Make sure to have discussed the following defects:

   a. Mouldy/mildewed beans – poorly dried beans, mouldy smell.

   b. Insect damaged/moth-eaten beans

   c. Slaty beans (dark-grey inside colour because of insufficient fermentation).

   d. Black beans with high free fatty acid (FFA) content caused by black pod and other diseases.

   e. Germinated beans caused by harvesting overripe pods.

   f. Purple beans because of harvesting unripe/green pods.

   g. Brown beans with black spots caused by over-fermentation.

   h. Smoked beans, caused by contact with smoke.

   i. Bean debris and foreign matter, because of poor sorting and unclean drying area.

   j. Small and flat beans, caused by poor nutrition and maintenance of the trees.

5. Ask the groups if any of them has a good quality bean. Let every group show the good quality bean. Walk around to check if every group has
selected the good quality bean.

6. Ask why producing good qualities beans are important. Guide the answer to:

a. It is a market requirement that your beans are of good/high quality.

b. It is a guarantee that your beans will be purchased when delivered to the Purchasing Clerks.

c. It helps to maintain the quality standard of the country’s cocoa.

7. Ask everyone to take their books. Together you are going to have a look at the drawings that are linked to quality enhancement. Make sure to mention the following:

a. Harvest at the right moment when the pod is yellow.

b. Pod-breaking with a non-sharpened steel blade.

c. Fermentation for six to seven days, cover with banana leaves.

d. Turn the bean mass every two days.

e. Drying on raised mats and removal of unwanted materials.

8. What to do with the defective beans. Guide the answer to: Return them to the field or compost them together with other plant material.

Demonstration and practice:
Demonstrate the physical assessment of cocoa beans.
- Size, presence of broken beans, fragments and pieces of shell and foreign matter.
- Degree of fermentation through a cut test.
- Explain the different grades of cocoa and their defective limits to farmers using the quality grade charts.
- Guide participants to do physical assessment of cocoa.

Guide questions:
Why do you have to sell only quality beans? Why is it necessary to discourage purple bean development?

Summary:
Summarise that good quality beans are required by the market and guarantee that your beans will be purchased when delivered to the PC. List what can be wrong about a cocoa bean. Use the poster to summarise the agricultural practices a farmer needs to do to get good quality beans.

Question: Ask if anyone has a question or comment.

Evaluation:
Ask participants why good quality beans are important. Ask what they need to do in order to get good quality beans.
7 Environmental Practices

7.1. Climate change or global warming and mitigation measures

Objectives:
- To help farmers understand the phenomenon of climate change or global warming.
- To explain mechanism and hazards of climate change and its effects on cocoa production.
- To explain to farmers what climate smart agriculture is.
- To explain to farmers climate change impacts in various cocoa growing regions.
- To explain to farmers site-specific adaptation strategies to mitigate climate change.
- To discuss measures such as tree planting to mitigate climate change.

Benefits or Expected Output:
- Farmers will be able to know and understand the phenomenon of climate change or global warming.
- Farmers will be able to understand the causes of climate change.
- Farmers will appreciate the effects of climate change on cocoa production.
- Farmers will be able to apply mitigation actions in their farms.

Direction: The focus will be on phenomenon of global warming, causes and effects and mitigation measures.

Materials required:
- Flip chart, markers, papers.
- A poster on climate change mechanism.
- Picture of badly burnt farm.
- Picture of cocoa farm with no shade against cocoa farm with shade.

Preparations required:
- A group of farmers (male and female farmers) to share their observations on climate change in their catchment areas.
- Ensure old men and old women are among the invitees to share their experiences.

Duration: 2hr

Procedure: Explanation, Demonstration, Exercise, Questions, Guidance

Introduce the topic climate change to the farmers.
- Lead farmers to discuss the phenomenon of climate change—what do they know about climate change using guided questions.
• Ask them to describe their observations on changes in vegetation in their locality over the last 30 years (reduction in tree cover, emergence of grasses etc).

• Ask them to describe their observations on changes in rainfall pattern, harmattan in their locality over the last 30 years.

• Ask them to describe their observations on how these changes (rainfall pattern, harmattan) are affecting cocoa farming over the last 30 years (more flower abortion, pod wilting and the abnormal development of pods leading to a decrease in yields).

• Ask them what they think are causing these changes (farmers may indicate pollution of the environment by industries, smoke from cars, bushfires, indiscriminate cutting of trees etc).

• Now explain the climate change mechanism to them using the poster (CO2, methane and other gaseous build-up in the atmosphere etc).

• Explain what climate smart agriculture means. (CSA assesses risk and needs of a specific farm or community and finds various methods to address problems identified).

• Explain to them climate change impact in various cocoa growing regions/districts and site specific adaptation strategies.

• Ask them what they think as individuals, as communities they can do to mitigate the effects of climate change particularly reduce build-up of gases.

Discuss the importance of tree planting.

Guide questions:
Have you heard about global warming? What is your understanding about global warming? What do you think is the cause of global warming? How is it affecting your farm? What measures can you take to mitigate its effects?

Summary: Review what has been discussed against the objectives set.

Question: Ask if anyone has a question or comment.

Evaluation:
Ask participants what they have learnt about climate change. Ask them the causes of climate change. Ask them how they will explain climate change mechanism to their friends, children. Ask how on their part they can help mitigate climate change. Let them enumerate the importance of tree planting in their farms and in their communities.

7.2. Water management

Objectives:
• To discuss why water is so important for growing cocoa and how we can protect our water sources.

Benefits or Expected Output:
• Farmers will not cultivate and contaminate a buffer zone of at least 5m to any water body.

• Farmers will know how to protect water sources around their farm.

• Farmers will avoid contamination of
these water sources and protect their health, family and environment.

**Direction:**
The focus is on several ways by which farmers will protect water sources and how to use water in the most efficient way.

**Materials required:**
- Poster depicting a stream.

**Preparations required:**
- Visit a stream around in the community.

**Duration:**

**Procedure: Explanation, Demonstration, Exercise, Questions, Guidance**

- Take the participants to your water stream (either a real water stream or Poster depicting a stream). Explain to them that this is a water stream. Show them the drawing of your cocoa field and tell them that this is your cocoa field.

- Place your cocoa field next to the stream (one meter or closer). Ask participants if they think it is a good idea to have a cocoa farm close to the water stream. Let a few people answer but do not comment on their answers. Tell participants that we are going to have a look at some of the consequences of farming nearby a water source.

- Trainer: *Try to engage some discussion during the next steps and encourage participants to think about the answer to the questions you will be asking.*

- Tell participants that you are working on your cocoa field doing cultivation and tillage. Ask participants what the consequences are for the water source. Guide the answer to: *Rain can wash soil into the water and contaminate it; the river bank can become damaged by erosion.* Ask participants if it is a good idea to cultivate so close to a water body. The answer is no.

- Tell participants that you have black pod on your farm and that you would like to spray with pesticides. Pretend you are spraying your farm. Ask participants what the consequences are of spraying so close to a water body. Guide the answer to: *pesticides can leak into the water stream or can reach the stream via the soil and contaminate it.* Ask participants if it is a good idea to spray so close to a water body. The answer is no.

- Continue with the discussion on black pod. Ask participants if it is more likely to have black pod on your farm if you are nearby or far away from a water source. Guide the answer to: *nearby.* Ask them why. Guide the answer to: the fungus grows best in moist conditions, and the air humidity around water bodies is higher. Ask participants if it is better to be close or far away from a water source with regard to black pod. The answer is far away.

- Tell participants that the raining season will start and there is so much rain that the water source is going to overflow. Ask what will happen to your farm? Your farm will be flooded. Ask participants again if it is a good idea to cultivate nearby the water. The answer is no.
• Ask participants again if it is a good idea to farm nearby a water stream. The answer is no.

• If it is not a good idea to cultivate or grow cocoa nearby the water, what would be a safe distance? Collect a few answers. Tell participants that for protecting the water and for certification reasons they have to keep a distance of at least five meter from the water body.

• Move your farm from the water source according to the necessary distance (Note for the trainer: the distances are different for every standard initiative. Under point 12 of these instructions, you will find the correct distance per standard initiative). Count the meters by counting your steps (one large step counts for one meter) or by using cutlets (1 cutlet is 33 centimetres).

• Now ask participants what else we can do to protect the water source from contamination. Guide the answers to: no waste deposit (including pesticides or fertilisers) into water bodies, no washing of protective equipment or spraying equipment in the water, no storage of pesticide containers near water. Ask for each case what the consequences would be. The consequences would be that you contaminate the water and people who are using the water (for example in the village next to your farm) will get sick. Make sure that everyone understands the consequences of contaminated water.

• Add that in order to conserve water and prevent contamination they need to plan carefully their activities which may affect water bodies.

• Refer to the drawings in the handout and explain them.

• Avoid contamination with agrochemicals or other waste.

• Maintain a natural vegetation belt.

Summary:
Summarise by saying that water is important for life and that we should handle it carefully. We should not farm too close to a water body (repeat the specific instructions according to the different standards), and avoid cultivation, tillage and spraying nearby water sources.

Question: Ask if anyone has a question or comment.

Evaluation: Ask participants why we should not farm close to a water source.

7.3. Use of agrochemicals and importance of MRL

Objectives:
• To explain to farmers the use of different agrochemicals as a component of ICM for cocoa insect pest and disease management.

• To mention the need to use only recommended agrochemicals and dosages rationally based on levels of pest infestation and disease infection.
• To mention the advantages and disadvantages of agrochemical use on cocoa.

• To emphasize the problems associated with the misuse of agrochemicals with special reference to environmental pollution and Maximum Residue Levels (MRLs) in cocoa beans and general food safety issues.

• To take precautions in handling agrochemicals to reduce risks involved in its use.

**Benefits or Expected Output:**

• Farmers will know how to use agrochemicals in a responsible way.

• Farmers will reduce loss of produce due to pests and diseases.

• Farmers will avoid accidents and contamination that might harm human beings, animals and the environment.

**Direction:** The focus is on handling and rational use of pesticides.

**Materials required:**

• Samples of agrochemicals such as fertilisers, insecticides, fungicides, herbicides, Insect Growth Regulators (IGRs) Pheromone traps and lures.
• Water, buckets, measuring cylinders etc.
• Spraying machines and accessories.
• Personal protective equipment.
• Dry cocoa beans (about 5kg)
• Weighing scales
• Pen-knives
• Sample bottles

**Preparations required:**

• A group of cocoa farmers (male and female, young and old) selected from operational area for participatory learning.

• Farmers may form sub groups if group is too big to ensure effective learning.

• A suitable cocoa farm with pests, diseases, weeds and other problems on one hand close to pests, diseases and weed free farm for comparison.

• Prepare or use adapted posters

**Duration:** 2hrs

**Procedure:** *Explanation, Demonstration, Exercise, Questions, Guidance*

• Create awareness through stories, pictures, posters, talks to inform farmers on use of agrochemicals to assist in the pest management process and yield increases of cocoa.

• Divide the group into two subgroups.

• Let each group list the agrochemicals they know and classify them into insecticides, fungicides, herbicides or weedicides and fertilizers etc.

**Advantages/Disadvantages**

• Initiate a healthy debate on the advantages and disadvantages of agrochemicals use on cocoa.

  - Agrochemicals especially pesticide control methods have been, at different times and places, considered either as:

    • crucial for sustaining a healthy crop
- expensive and of limited cost efficacy,
- or environmentally unsound in the complex cocoa agro-ecosystem.

- Facilitator needs to stress that improved crop varieties and various alternative biology-based control techniques may eventually offer sustainable long-term solutions.

- Impress on farmers use of improved materials with inherent genetic resistance to pests, removal and burning of diseased plant parts, pruning, removal of infected/infested pods and regular complete harvesting help greatly in reducing use of pesticides.

**Safety**
Facilitator may stress the fact that,

- Safety aspects are of course by far the greatest concerns for the general public and thus regulators, but agrochemicals can be important tools for farmers and cannot simply be wished away.

- Consumers do not always appreciate the high levels of disease and insect pressure that occur in tropical countries, and solving pest control problems for farmers remains a crucial challenge.

- Facilitator may create awareness in farmers to try to meet international standards for cocoa based on general principles and standards of our trading partners such as EU, USA and Japan.

- The Codex committee adheres to a code of ethics for international trade in food.

  - Codex has the following general principles:

  - International trade in food including cocoa should be conducted on the principle that all consumers are entitled to safe, sound and wholesome food and to protection from unfair trade practices.

  - No food should be in international trade which has in it or upon it any substance in an amount which renders it poisonous (refer to agrochemicals), harmful or otherwise injurious to health;

  - consists in whole or in part of any filthy, rotten, decomposed or diseased substances.

  - Consistor foreign matter, or is otherwise unfit for human consumption;

  - or is adulterated;

  - or is labeled;

  - or presented in a manner that is false, misleading.

  - or is deceptive;

  - or is sold, prepared, packaged, stored.

  - or transported for sale under unsanitary conditions.

**Handling**
Discuss the following:

a. Apply chemical pesticides based on
levels of infestation, rational use and the use of personal protective equipment (PPE).

b. Use only agrochemicals that are approved by the authorities. With chemicals that are not approved by the authorities you are not sure about the active ingredients. The container might contain something completely different and can damage or destroy your cocoa. In addition, it is illegal to buy illegal or fake chemicals and you can be arrested.

c. Empty agrochemical containers should be stored, labelled, handled and disposed of safely. Reusing empty containers can lead to sickness and even death.

d. When transporting agrochemicals, they must be properly closed to prevent spillage, and be separated from human beings and other user items. If chemicals are spilled during transport it can do serious damage to humans, animals and the environment.

e. Store agrochemicals in places which are well ventilated and light enough to ensure that product labels can be easily read. Keep agrochemicals out of reach of children. If products are well stored, the quality will be guaranteed until the expiry date. Good ventilation is important to avoid nasty smells. If children swallow pesticides, they can die.

f. After applying agrochemicals, place warning signs at the farm to indicate the time of application and recommended days until harvest. People can get very sick if they enter a farm that has just been sprayed.

5. Ask every time the participants why they should do this. Then give the correct answer. Mention the following:

a. Never use your mouth to clean nozzles. This is to avoid contamination.

b. Never eat, drink or smoke while spraying. This is to avoid contamination.

c. Never spray against the wind. This is to avoid that the cloud of spray will contaminate you.

d. Never spray when it rains. This is to avoid that the agrochemical will be washed away before being effective.

e. Know the target area to spray (pods, trunk, shoot or whole tree). This is to ensure that the pest or disease will be controlled.

f. Select the right nozzle and setting according to type:

i. The cone nozzle is commonly used for fungicides and insecticides.

ii. The flat fan nozzle is for general purpose and spray boom.

iii. The deflector or anvil nozzle is for herbicides.

g. This is to ensure that the chemical is applied in the correct measurements.

h. Use the right amount of water and pesticide mixture. Follow the instructions on the label. Only mix as much pesticide as you need for the day. This is to avoid over- or under-dosing.
Spray evenly and make sure you do not miss any target. This is to ensure that the pest or disease will be controlled.

If there is dripping from the pods or leaves, reduce your volume application rate because you are spraying too much. This is to avoid over-spraying and wasting agrochemicals.

**Importance of Maximum Residue Level:**
A role play to highlight the importance of Pesticides Maximum Residue Level (MRLs) bordering on food safety can be organized as follows:

- Select two elite farmers from the group and let them play the role of a foreign buyer of cocoa dry beans.

- Select five farmers and give each one a kg of dry cocoa beans as their produce for sale (preferably dry beans from different farmers).

- Let the foreign buyers inspect the dry beans, grind a few of them and do some imaginary analysis of pesticides in the beans.

- Foreign buyers then decide to buy the beans which pass the test (2 or 3 farmers’ beans and fail the rest on bases of too high pesticides (Thiodan, Thionex, Endosulfan or the approved ones like Confidor, AkateMaster and Actara).

- Let the farmers explain the types of pesticides used, how they were used and link it to the high MRLs leading to the rejection of their beans.

**Guide questions:**
- Should we spray the cocoa farm regularly?
- Can we use any chemical product to spray?
- Which product to choose?
- Is it effective? Is it safe? Is it affordable? How do we handle chemicals?
- Will it lead to rejection of cocoa beans?

**Summary:**
Summarise safe use of chemicals, handling and issues of maximum residue level.

**Question:** Ask if anyone has a question or comments to make.

**Evaluation:**
Review what has been discussed against the objectives set. Ask participants what they have learnt about safe use of agrochemicals. Let them mention the “dos” and “dons” when using agrochemicals.

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### 7.4. Ecosystem protection

**Objectives:**
- Understand the importance of biodiversity for the environment and for the cocoa farm.

- Understand the contributions of forests to the ecosystem.

- Maintain the required (by standards) number of forest trees in farms.

- Create protected zones by growing trees along water bodies.

- Preserve some natural species (such as multi-purpose trees and shrubs) as wildlife refuges on their farms.
Benefits or Expected Output:
• The need to protect ecosystem.
• That a healthy ecosystem will contribute to healthy cocoa trees and reduce the need for chemical inputs.
• The need to plant recommended trees in cocoa farms, along water bodies.

Direction: The focus is on ecosystem protection and the importance of trees and forests.

Materials required:
• Picture of forested land-flora and fauna.
• Picture of a farmland badly burnt.
• Picture of cocoa farm with no shade as against cocoa farm with shade.

Preparations required:
• Locate a farmland where biodiversity can better be explained. A land where trees, protected zones, natural vegetation, waterways, fauna exist etc.
• Trainers should review section on ecosystem protection in the manual.
• A group of farmers (male and female farmers) to share their observations on a forest they know of.
• Ensure old men and old women are among the invitees to share their experiences.

Duration: 2hrs

Procedure: Explanation, Demonstration, Exercise, Questions, Guidance

1. Ask the participants if someone can explain what an ecosystem is. Collect a few answers and then guide the answer to: An ecosystem consists of plants, animals and microorganisms all interacting among themselves and with the environment in which they live (soil, water, forest, cocoa farm).

2. Ask the participants what the role of forests is. Guide the answers to: Forests enhance rainfall. This happens when trees capture water from the ground and release it into the atmosphere. This water comes back as rain water. Trees act like a sponge to retain large quantities of water. They gradually release the water so that it does not run off to cause floods and erosion. Often, the only streams that flow in the dry season are found in forests.

3. Ask the participants why it is important to preserve the ecosystem. Collect a few answers and add the following: All living species have a role to play in our environment. Forests, for instance, provide habitats for many plants and animals that find shelter and food. A healthy ecosystem contributes to a sustainable cocoa production.

4. Ask if we always take good care of the ecosystem around us or if someone can mention some examples of not taking good care of the ecosystem. Collect a few answers. Add, if necessary, that farming, cutting down of trees, development of roads and new settlements destroy habitats of plants and animals.

Guide questions
• What do they understand by biodiversity?
• Why do we have to protect biodiversity?
7.5. Wildlife protection

Objectives:
To learn about the importance of wildlife to the ecosystem and its protection.

Benefits or Expected Output:
1. Farmers will learn the importance of wildlife to the ecosystem.
2. Farmers will take steps to protect wildlife.

Direction: The focus is on wildlife protection.

Materials required: Pictures of wildlife, burnt farms.

Preparations required: Nil

Duration: 45min

Procedure: Explanation, Demonstration, Exercise, Questions, Guidance

1. Ask farmers gathered whether wild animals they used to see in their numbers are decreasing or not and whether some are in existence or not. Collect a few ideas and discuss the list of animals that used to live in the area. Make sure the following is mentioned: The natural homes of plants and animals have been altered or destroyed due to farming activities such as land clearing, bush burning, application of agrochemicals, ploughing and harrowing as well as logging.

2. Ask participants why it is bad that wildlife is disappearing from farms. Collect a few answers. Make sure the following is mentioned: Wildlife plays a vital role in the ecosystem. As part of good environmental practices as certified cocoa farmer, we need to protect the wildlife.

3. Show participants the drawing with the bad practices. Explain that these drawings are bad practices. Ask participants what these bad practices are in relation to wildlife. Let participants discuss for a few minutes in pairs. After a few minutes, collect answers from a few groups. If a group mentions an action cocoa farmers should not do, ask why they should not do this. Mention the consequences of the actions so participants clearly understand why this action is not good. Add any ideas if necessary. Make sure the following is mentioned: bush burning, draining of ponds, poisoning for harvesting wildlife animals and other forms of illegal hunting, and overuse of fertilisers and pesticides or their application too near to water bodies. Refer to the drawings every
time a bad practice is mentioned. Add that these drawings are also on their posters (point out where on the poster).

4. Show participants the drawings with the good practices and explain that these drawings depict good practices. Ask what these good practices are. Discuss in the same way as the bad practices. Make sure the following is mentioned:

a. Protect and restore the ecosystems that provide habitats for wildlife living on the farm, or that pass through the farm.

b. Harvesting should be done in a manner that:
   
   - Maintains the viability of the species and allows it to continue to reproduce itself.
   
   - Is moderate to ensure that the product is still available to other species in the ecosystem which depend on it.
   
   - Maintains a varied ecosystem as much as possible by retaining semi-natural habitats such as wetlands, forest trees and having a wide mix of crops within the cocoa plantation.

   - Respects legislation (i.e. closed season and open season).

   - Endangered species are not collected on any occasion.

Guide questions:
- What do they understand by biodiversity?
- Why do we have to protect wildlife?
- What can we do to protect wildlife?

- How do we protect wildlife?

Summary:
Summarise why wildlife is important and what the do's and don'ts are. Use the drawings to give the summary.

Question: Ask if anyone has a question or comment.

Evaluation:
Ask participants why wildlife is important. Ask what they should not do as cocoa farmers. Ask what they should do.

### 7.6. Waste management

Objectives:
To discuss the types of waste generated on farm and how best be dealt with.

Benefits or Expected Output:
- Farmers will know how to deal with waste in a proper way
- Farmers will avoid contamination of the environment, their farms and of their families.

Direction: The focus is on several types of waste that can occur on a farm.

Materials required:
- Empty bottles with a fake label (made of paper wrapped around the bottle) that says “pesticides”. It is too dangerous to use real pesticides bottles
- Empty carton boxes with the self-made label “agro-inputs”
- Empty plastic bags with the self-made label “agro-inputs”
• Empty plastic bags
• Empty water bags Cocoa and other leaves
• Cocoa husks
• Infected pods
• Bucket with water
• Empty bucket with the label spraying tank or a real spraying tank
• Sharp object to puncture a plastic bottle
• Gloves

**Preparations required:**
Put all materials (except the two buckets and the sharp object) on a table so participants can clearly see them.

**Duration:** 1.5hrs

**Procedure:** *Explanation, Demonstration, Exercise, Questions, Guidance*

- Ask participants what type of waste they have on their farms. Make sure the answers include empty packages from agro-inputs (such as plastic bottles, carton boxes, and plastic bags), empty water bags (when they drink something on the farm), cocoa leaves, infected pods, cocoa husks and other materials. Every time a type of waste material is mentioned and you have it on your table, pick it up and show it to all participants.

- Ask why you should manage waste on your farm. Guide the answer to: *leaving waste on your farm can damage your health, the health of other persons and animals, and it can damage the environment.* Add that they should dispose of waste as soon as possible so that it does not accumulate on the farm.

- Tell participants that we will start with all packaging materials for agro-inputs. Put on the gloves and tell participants the first thing they should always do is to protect themselves! Hold up the empty pesticide bottle. Look at the bottle and say that this bottle is of very good quality and that you are sure your wife/sister would like to use it to transport water. Ask participants if they think this is a good idea. Ask why it is not a good idea. Guide the answer to: *pesticides are hazardous for human beings. When re-using empty bottles or other containers, people can get poisoned and they can even die.*

- Ask participants what you should do with the empty bottle. The correct answer is to triple rinse it. Ask if someone can explain what triple rinsing means. The correct answer is: *triple rinsing means you have to rinse the empty bottle three times with clean water.* Ask if someone can demonstrate this for you. Give the person the bucket with water and the spraying tank or labelled empty bucket. Tell participants that we will demonstrate triple rinsing for a plastic bottle, but that they should follow the same procedure for metal containers.

- Let the volunteer triple rinse the bottle. Every time the volunteer is doing a step
  - ask other participants what the volunteer is doing. If necessary, explain or add information. Make sure the following steps are clearly demonstrated and explained.

  a. Keep the bottle upside down to make sure all liquids are out. You should empty
the bottle in the spraying tank.

b. Fill the bottle for one-fourth with clean water.

c. Close the bottle and shake for 30 seconds. Shake in a vertical way, not horizontally. This is to ensure that all liquids are mixed with the clean water.

d. Empty the bottle by placing it upside down over the spraying tank. Hold it for 30 seconds.

- Repeat step b, c and d two times (in total you rinse the bottle three times).

- Thank the volunteer for the excellent job done. Hold up the empty bottle and say: “So, this bottle is well cleaned, so my wife/sister can use it now to carry water.” Wait for reactions. If there is no reaction, ask if this is a good idea. Ask why this is not a good idea. The correct answer is that even if a pesticide bottle is triple rinsed, it still contains residues that cannot be seen with the naked eye, but still harm human beings and the environment. Repeat that you can never re-use empty pesticide containers. Let all participants repeat this after you. Tell participants in order to make sure that no one can re-use this bottle, they should puncture it. Take a sharp object and puncture the bottle at the bottom.

- Point to the empty bucket (your spraying tank). Ask what you should do with the waste in your spraying tank. *Guide the answer to:* you should use it for the next spray of your cocoa trees.

- Tell participants that we are going to continue with the other types of packaging materials for agro-inputs. Hold up the carton box and the plastic bag with agro-inputs. Ask what to do with this. To avoid re-use, they should destroy it by puncturing or cutting it in pieces.

- Show participants all punctured empty agro-input package materials and ask what you should do with it after you have punctured everything. If someone says burning, ask what the consequences can be. When burning these materials, toxic smoke can develop. Even the on-farm incinerator is not allowed anymore because temperatures are not high enough to eliminate the toxic components.

- If someone says burying, ask what the consequences can be. The consequences can be that the soil is getting contaminated.

- Add that the best option is to return the packages to the dealer or buying company.

- Hold up the plastic bags and empty water bags. Ask what to do with this. If possible, the materials should be re-used. In some countries, including Ghana, there are projects that collect the empty water bags and recycle them into handbags and other user items.

- Hold up the organic waste, including the leaves and pods. Ask what to do with this. These materials can be used in sustainable ways such as composting and mulching.
Repeat the key messages:

a. Do not litter your farm with agrochemical containers, fertiliser bags, seed bags, feed bags, etc.

b. Dispose of waste as soon as possible so that it does not accumulate on your farm.

c. Dispose of any agrochemical hazardous waste in a safe manner as indicated on their label.

d. Use organic waste in sustainable ways such as composting and mulching.

Guide questions:
- What types of waste generated on the farm?
- How do you dispose of waste?

Summary:
Summarise the key messages, explain the triple rinsing principle and stress that empty pesticide containers must never be re-used.

Question: Ask if anyone has a question or comment.

Evaluation:
Ask participants why waste management is important. Ask how to dispose of empty pesticide containers. Ask what to do with organic waste.
Objectives:
• To discuss how to protect ourselves when handling pesticides.
• To discuss how to protect our children and the environment against hazardous pesticides.

Benefits or Expected Output:
• Farmers will appreciate the need to wear personal protective equipment.
• Farmers will know how to properly wear personal protective equipment.

Direction: The focus will be on safety and health rules when handling pesticides, sharp tools and ladders.

Materials required:
• Personal Protective Equipment including gloves, boots, overalls, hat, goggles and mouthpiece or facial screen.
• Flip-sheet board.
• Markers (at least one black and one red).

Preparations required:
Drawing of a human being (covering a full flip-sheet).

Duration: 1hr

Procedure: Explanation, Demonstration, Exercise, Questions, Guidance

Ask participants again why we should wear protective equipment when handling pesticides. They will answer: to protect ourselves. Tell participants that we are going to have a look at the consequences when they do not wear protective equipment during handling and spraying of pesticides. Show your drawing of the human being. Ask participants how pesticides can enter your body. Every time a participant mentions a body part, take the red marker and mark that part red. For example, when someone says “mouth”, mark the mouth red. By the end, your whole human being should be red, because pesticides can enter through:
- Dermal transfer: via the skin - when skin and eyes are not protected-, or when pesticides soak through clothing.
- Inhalation: by breathing, especially in closed spaces.
- Ingestion: by swallowing, when eating, drinking, or smoking with contaminated hands.

Guide the answers to:
• Itching
• Burning of the skin, leaving scars
• Blindness (if contact with eyes)
• Numbness or weakness of arms, legs, feet or hands
- Some serious cases can lead to infertility (after contact with the scrotum, for example when urinating with contaminated hands) and even death.

- Ask participants what will happen to you when you get contaminated by pesticides by ingestion or inhalation.

Guide the answers to:
- Dizziness
- Vomiting
- Convulsions
- In serious cases it can lead to coma and respiratory and cardiac failure resulting in death.

- Tell participants that we have heard enough reasons to protect ourselves when handling pesticides. Ask participants how we know what to wear as protective equipment.

Guide the answer to: on the label. Therefore we should always read the label when handling pesticides. Refer to the label that is shown on their posters.

Now we are going to see in practice how we can protect ourselves. Take the protective equipment and show all pieces to the participants. Every time you show a pieces, you ask participants the name and what it protects:

- Gloves to protect your hands.
- A hat to protect the top of your head.
- Overalls (or comfortable clothes) to protect your body, arms and legs.
- Boots to protect your feet.
- Goggles to protect your eyes.
- Respirator or mask to protect your mouth and nose.
- Facial mask to protect your eyes, mouth and nose.
- Ask for a volunteer. Ask the volunteer to stand in front of the group. Tell the group that they should tell the volunteer how to dress him/herself. Every time someone says something and the volunteer does it, describe what the volunteer is doing. Ask the other participants why the volunteer is doing this. For example: if the volunteer is putting on gloves over his sleeves, say: He is putting the gloves over the sleeves. Is this correct? Can anyone tell me why?

- Make sure to discuss the following:
  - Order of putting equipment on: start with the overalls or an apron; then put on the mask, goggles, hat, boots, and finally the gloves.
  - Wear gloves on the outside of sleeves to avoid chemicals leaking into the sleeves (except when mixing; in that case gloves should be worn under the sleeves).
  - Wear trousers on the outside of the boots to avoid chemicals leaking into the boots.
  - Ask the volunteer to remove all equipment again. Tell participants that when removing equipment they should start by washing the gloves (while wearing them) before removing anything. Then remove the hat, goggles, mask, boots, gloves, and
overalls. Thank the volunteer and let him take his seat again.

- Add that they should wash themselves with soap and water after they have finished. Work clothes including footwear must be washed with soap or other detergents after each day’s use. It must be washed separately from other clothing and kept in a separate place. They should not dispose of the washing water near a water source.

- Tell participants that they now know how to protect themselves, but they should also protect their children and the environment. They can do this by:
  - Storing agrochemicals in locked places to protect themselves, their children and other people from hazards.
  - Storing agrochemicals in tight containers so that they do not spill over or evaporate.
  - Placing warning signs at entry points of treated areas to alert people of the re-entry after a pesticide spraying.
  - Categorically excluding that persons younger than 18 years and pregnant or breastfeeding women handle or apply agrochemicals.

For each item, refer to the drawing as shown on their poster.

- Add that besides agrochemicals, also sharp tools and ladders can cause accidents. Sharp tools can cause cuts to the operator 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, and even amputations, especially during chain saw operations. Falling from a ladder can result in broken bones and other injuries.

- Ask what can be done to avoid accidents with sharp tools, make sure the following is mentioned:
  - Always wear closed shoes when working on the farm.
  - When working together in a group, leave a wide distance between you and the others.
  - Do not use sharp tools after drinking alcohol or taking medicine that makes you feel sleepy.
  - Chain saws should only be used by a trained operator or under the supervision of an experienced operator.

- Ask what can be done to avoid falling from a ladder. Make sure the following is mentioned:
  - Inspect ladder to ensure it is in good order.
  - 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.
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.

Summary:
Summarise by showing the personal equipment, detail what it protects and specify for the boots and gloves how to wear them (trouser over boots, gloves over sleeves). Add how to protect children and the environment. Ask what to do to avoid injuries from sharp tools and defective ladders.

Question: Ask if anyone has a question or comment.

Evaluation:
Show participants a few pieces of protective equipment and ask what it protects and how we should wear it. Ask who can handle and apply agrochemicals. Ask how we protect our children and the environment.

8.2. Child labour

Objectives:
- Understand the basic concept of child, child labour and its implications for their livelihood.
- Know the tasks which children, as part of the socialization process, can undertake on cocoa farms and the times when they could do this.
- Know activities in the cocoa sector that are unacceptable for children to do.
- Know the various efforts to protect children-institutional and legal.

Benefits or Expected Output:
Farmers will:
- Know who a child is in legal terms and the legal provisions protecting their rights.
- Understand the key concepts in child labour, that is, define child labour and the various forms that persist in the cocoa areas,
- Understand that there is nothing wrong in their children helping them on their farms provided they attend school and the work is appropriate for their age, they use the right tools, the time the work is done is okay and the conditions are okay.
- Identify categories of cocoa work appropriate for different ages and stages of a child’s development, based on the Cocoa Hazardous Activity Framework (HAF),
• Identify cocoa activities/tasks that are hazardous as a result of the circumstance under which they are carried out and discuss making these safer for legal working aged children to be in decent employment,

• Understand the negative effects of child labour on the child, the livelihood of the farmer and the sustainable development of the community and Ghana’s economy.

• Identify the various interventions and analyse best approaches of eliminating child labour in the cocoa sub-sector.

**Direction:**
The focus is on child labour and its various forms and interventions to eliminate it.

**Materials required:**
• Flipchart/board, marker/chalk, pens/pencils and plain sheets.

**Preparations required:**
• Trainers should review section on child labour in the manual.

• Pre-arrange meeting, venue, and necessary logistics for training with the community.

**Duration:** 2hrs
**Procedure:** *Explanation, Demonstration, Exercise, Questions, Guidance*

**Trainer to lead discussion on the following:**
1. **Definition of a child:**
   a. Facilitator finds out from participants on their understanding of who a child or he/she may ask a direct question such as “who is a child”?

   b. Facilitator elicits responses from participants and records them on a flip chart.

   c. Facilitator then reconciles the responses provided by participants with information provided in resource section on the definition of a child.

2. **Child labour concepts:**
   a. Ask participants the role of children in the household.

   b. Ask participants the use of children in household activities that can harm them.

   c. Ask participants to mention the main activities in the cocoa value chain (from land preparation, planting, maintenance, harvesting, post-harvesting to the point of sale) Find out from participants;

   d. Which of these cocoa activities are carried out by children? Which of the cocoa activities can harm children?

   e. Facilitator then asks participants their understanding of child labour.

   f. Quiz participants on the differences between Child Labour and child work/permissible work.

   g. Facilitator finds out from participants the causes and effects of Child Labour.

   h. Facilitator then reconciles the responses provided by participants with information provided in resource section on child labour.

   i. Why child labour is an offense and the legal provisions on CL (reference the resource section on legal provisions on
child labour).

j. What is Worst Form of Child Labour?

i. What are the worst forms of child labour? (slavery-like practices; children in prostitution, pornography; child trafficking and, hazardous work).

ii. What are unconditional WFCL? (slavery-like practices; children in prostitution, pornography; child trafficking).

iii. What are hazardous work in cocoa production.

iv. How can children be protected from hazardous work.

3. Stakeholders’ roles in child labour elimination
a. Discuss how Child Labour can be eliminated?

b. Facilitator asks participants to mention the roles you can play to eliminate child labour in their communities?

Summary:
Summarise what child labour, child work and hazardous work are.

Question: Ask if anyone has a question or comment.

Evaluation:
Let them distinguish between child labour and child work/permissible work. Ask what hazardous work is and which activities in cocoa cultivation are deemed hazardous to children. Ask how child labour may be eliminated from cocoa growing communities.

8.3. Introduction to certification

Objectives:
- To explain what certification is.
- To explain the benefits of certification.
- To explain the difference between the three standard initiatives.

Benefits or Expected Output:
Farmers will know that being certified has many benefits. Farmers will know how to apply for it and benefit from all advantages.

Direction:
The focus is on introduction to certification and a discussion three standard initiatives: UTZ, Rainforest Alliance and Fairtrade.

Preparations required: Nil

Materials required:
- Logo of UTZ, Rainforest Alliance and Fairtrade in large (see at the end of the Instructions).
- Visual 1 to 7 in large print.
- Masking tape.

Duration: 1hr

Procedure: Explanation, Demonstration, Exercise, Questions, Guidance

1. Ask participants to form buzz-groups (small groups of two to three participants). Let the groups discuss the following question: What is certification? They do not have to write their answers, only discuss the question.
2. After a few minutes ask several groups for their answer. You do not have to write the answers, just listen to the groups and ask for clarification if needed. Try to pick out key words, such as standards or requirements and standard organisation or certification body. Probably some farmers will mention the premium.

3. Tell farmers that certification is a procedure, which means that the farmers need to follow certain steps. The objective of this procedure is to ensure to customers who buy the end-product (for example chocolate) that the cocoa has been produced respecting certain rules (standards or requirements). Add that standard initiatives, such as Fairtrade (FLO), UTZ Certified, or Rainforest Alliance, can give this certification.

4. Ask a few people to tell in their own words what certification is. Correct and add where necessary. Make sure that everyone understands what certification is.

5. Ask participants why they think certification exists. Collect a few answers but do not tell participants the answers are correct or wrong. To explain why certification exists, ask participants what type of final products are made from cocoa. This is chocolate and many other products that use chocolate, such as chocolate cookies, cakes, chocolate bars, chocolate drink (Milo), etc. Show visual 1 (the picture of the man in the shop buying chocolate). Explain that more and more consumers become aware of the negative effects of food production, such as deforestation, soil erosion and contamination with pesticides. Therefore, an increasing number of consumers want to buy products from farmers who respect environmental standards. Similarly, consumers don’t want to buy products that have been produced through exploitation of workers or children and therefore demand cocoa products originating from producers who respect international social standards. In short: certification exists because of the many challenges in cocoa production and certification is one way of addressing these challenges.

6. Repeat that certification exists, because consumers want to know for sure that the cocoa comes from a farm that has followed certain procedures that guarantee good environmental and social practices. Ask if anyone can think about what type of practices a certified cocoa farmer needs to do. Collect a few answers but do not explain (this will be done in other sessions). Make sure to include good agricultural practices (e.g. pruning, weeding, sanitation), soil fertility management, safe and responsible fertiliser and pesticide application, good post-harvest management, good environmental practices (e.g. water management, wildlife and forest protection, waste management), good social practices (health and safety, child labour, working conditions) and record keeping.

7. Add that it also means that some practices are not allowed anymore. Show the drawings of child labour (visual 2), excessive spraying (visual 3)
and cutting trees (visual 4) to clear land. Paste them on the wall. Tell participants that during this course, we will discuss all these topics in separate sessions. Add that all the good agricultural, environmental and social practices are principles or control points for the standard initiatives. After they have implemented all these practices, an external auditor will visit them to see if the group performs well.

8. Tell participants that there are many advantages related to certification for cocoa farmers. Ask if anyone can think of an advantage. Collect answers and explain and add where necessary. Make sure the following is mentioned: strengthening farmers’ organisations, group learning (show visual 5), improved production technology, higher yields (show visual 6), better quality, less defects and increased incomes via increased yields and premiums (show visual 7). Paste all visuals on the wall. Add that there are many good reasons for complying with the standards and that the premiums are an additional benefit.

9. Tell participants that in the beginning of the session you have mentioned three standard initiatives. Ask if someone can recall the names. They are UTZ, Rainforest Alliance and Fairtrade.

10. Explain that Fairtrade guarantees a Fairtrade Minimum Price for producers (which acts as safety net should market prices fall) and a guaranteed and fixed Fairtrade Premium. The Fairtrade Premium is not paid to the individual producer. Producers decide collectively and democratically how to use it. Typically they invest it in education, healthcare, farm improvements or processing facilities to increase income. The Premium and the democratic decision-making process on its use is the core element of the Fairtrade certification to motivate producer organisations to comply with the standards but also to help improve their livelihoods. The fixed Premium is specific to Fairtrade. Add that we will discuss premiums in a later topic. All cover social and environmental standards, although Rainforest Alliance places more emphasis on protecting wildlife and biodiversity, while UTZ stresses the importance of traceability in cocoa supply chains and specifies how beans should be harvested and handled to produce a high quality crop. Fairtrade and UTZ also address environmental aspects: Environmental requirements should enable producers to face their environmental challenges, strengthen their livelihoods sustainably, contribute to a more sustainable planet and make sure future generations are able to use the land. All three standard initiatives promote good agricultural, environmental and social practices. The environmental aspects in all standards protect producers’ health and safety and ban the use of GMOs and dangerous chemicals.

11. All standard initiatives also consider other certificate holders, such as traders and exporters, provided they can guarantee the compliance with the standards.

12. Add that farmers’ groups can apply to get certified against one, two, or all
three of the standards, as long as they are ready to follow the requirements of them. The advantage of being certified by several organisations is easier access to markets, as the exporter can supply the same cocoa to different buyers without searching for lots with a specific certificate. The inspection costs can also be reduced, if compliance of several standards is checked in one inspection as compared to individual inspections for each standard. However, Fairtrade has a specific audit, carried out by FLO-CERT. The choice of certification should be discussed with the group’s buyers in order to make sure their efforts will be rewarded.

Summary:
Summarise what certification is, why it exists, what farmers need to do to get certified, what the advantages are, and resume very briefly the differences between UTZ, Rainforest Alliance and Fairtrade.

Questions: Ask if anyone has a question or comment.

Evaluation:
Ask participants what certification is, why it exists, what farmers need to do to get certified, what the advantages are and the main differences between UTZ, Rainforest Alliance and Fairtrade.

8.4. Cocoa traceability

Objectives:
- To discuss what traceability in cocoa farming means.
- To discuss the importance of tracing cocoa along the value chain.
- To discuss with farmers what they need to do as certified cocoa farmers.

Benefits or Expected Output:
- Farmers will know that traceability is a very important aspect of certification.
- Farmers understand the need to ensure traceability.
- Not mix certified cocoa beans with non-certified.
- Strictly adhere to the physical separation, labelling and documentation requirements according to the standard initiative they deal with.

Direction:
The focus will be on traceability of cocoa throughout the cocoa chain but farmers must realize that they are only responsible for the traceability as long as they are the owner of the cocoa.

Preparations required:
You need a wall or board to paste all drawings.

Materials required:
- Some cocoa beans in a transparent plastic bag.
- A bag used to store and transport cocoa beans.
- Marks, codes or labels used for marking certified cocoa.
- (Note for the trainer: if the groups have
already selected a certain standard, make sure you have the labels used by that standard initiative).

- Masking tape (Note for the trainer: if the groups have already selected a certain standard, make sure you have the labels used by that standard initiative).

- Drawings as in the handout (see end of this session).

**Duration:** 45min

**Procedure:** *Explanation, Demonstration, Exercise, Questions, Guidance*

- Tell participants that someone receiving a package would like to know where it came from. The same is true for buyers of cocoa and consumers of cocoa products; they would like to know where it comes from. The reason is that they would like to monitor the quality of the cocoa and provide feedback if necessary. Add that governments, consumer organisations, health experts, and the media are taking an increased interest in food safety, and in residue and contaminant issues which might cause damage to health. Therefore, in a sustainable cocoa economy, cocoa quality with respect to food safety is of great importance, exceeding even physical and flavour quality needs.

- Ask where the beans go after fermentation and drying. After fermentation and drying the beans will be stored. Paste the drawing which shows storage to the right side of the other picture and move the bag with beans to this picture.

- Ask where the beans go next: they will be bought by a Licensed Buying Company (LBC). Paste the drawing which depicts the sale of the beans to the LBC to the right side of the fermentation drawing and move the bag to this picture.

- Ask what will happen after a LBC has bought the beans. Collect answers but do not paste any drawings. Make sure the following steps are mentioned: they will be stored in the harbour, shipped to Europe or another continent, manufactured, placed in a store to be sold, and finally bought by consumers. Ask if they will be involved in any of these steps. The answer is “no”, therefore we will focus only on the first steps as depicted in the drawings: harvesting, storage and selling to a LBC.

- Ask what they should and can do as cocoa farmer to ensure that the consumer knows that the cocoa in his product is coming from them.

*Guide the answers to:*

- Avoid mixing of certified and non-certified cocoa.

- Separate cocoa beans according to the rules of the standard initiative they deal with.
Use marks or codes to allow traceability.

- Show participants they must separate the cocoa beans according to the rules of the standard initiative they deal with, and use marks or codes to allow traceability throughout the chain.

**Summary:** Summarise by saying that traceability is important to show that the certified produce actually comes from a farmer who is implementing good agricultural, social and environmental practices.

**Cocoa farmers need to:**

a. avoid mixing of certified and non-certified cocoa.

b. separate cocoa beans according to the rules of the standard they deal with, and

c. use marks or codes to allow traceability.

**Questions:** Ask if anyone has a question or comment.

**Evaluation:** Ask participants why traceability is so important. Ask what they as cocoa farmers need to do to ensure traceability.

**8.5. Basic book keeping, costing and pricing**

**Objectives:**

- To train farmers to keep basic records.

- To train farmers in basic costing of their operations for decision making.

- To appreciate the need to keep records for management purposes.

**Benefits or Expected Output:**

- Keep Records for Farm Management or business.

- Understand the costing and pricing mechanisms of farm inputs and outputs and efficiency of farm/business management.

**Direction:** The focus is on basic record keeping.

**Materials required:**

Flip chart/board, marker/chalk, pen/pencil and plain sheets.

**Preparations required:**

- Trainers should review section on record keeping and cost in the cocoa manual.

- Pre-arrange meeting and venue and necessary logistics for training with the community.

**Duration:** 2hrs

**Procedure:** Explanation, Demonstration, Exercise, Questions, Guidance

**Record Keeping**

i. Ask participants how they keep records [money business receives and money business pays out].

ii. Write down all the various ways and discuss with them.

iii. Ask participants why we need to keep financial records?

iv. List all the reasons, discuss with them and add on. Tell them it helps:
- To know what happens to the farmer’s money—how much money was generated, how much was spent, how much is left.

- If business is doing well use your records to find out why, then find and plan ways to do even better.

- If business is not doing well, use your records to find out what is wrong. Then plan ways to solve the problem.

- to show how much money the business have at any point in time.

CASH BOOK:
*Explain and discuss what a Cash Book is.* Refer to farmer business school books.

- The Cash book records what happens
to the money made in the business how much is generated, how much is spent and how much is left.

- Every time payments are made write it down.

- Every time the business receives money write it down.

- This way you will know how much you have spent and how money is left.

**Practice:**
Organize a practice session on how to use the cash book. Divide the participants into groups (at least 2 in a group) and ask each group to complete the Cash Book form (Worksheet 1) as you call out the board the items to be recorded. Give the groups time to record it and work out the balance. Move from group to group to help.

**Example:**
- At the beginning of the year the cocoa farmer had ¢600.00 on hand.

- Then sold 5 bags of cocoa for ¢700.00 cedis.

- Then he/she paid ¢10.00 for the carting of water for spraying.

- Then he/she paid ¢200.00 for fertilizer and insecticide.

- Then he/she sold plantain and cassava for ¢50.00.

- How much balance has the farmer been left with?

**COSTING/PRICING**

1. Let participants list all operations involved in cultivating one acre of cocoa from land acquisition to harvesting and sale on the board. (This should normally include land acquisition, land preparation, planting, weeding fertilizer and insecticide application among others).

2. Let participants provide the values of these activities.

3. Write and explain to the participants your ways of determining costs and pricing, pointing out the similarities and differences from what have been done by participants above. Tell them:

   - Costing is the way you calculate how much each individual product costs you to produce and sell.
• **Costing involves the following:**
  a. Identifying the various inputs used on your farm or other enterprise.
  b. Quantifying each input.
  c. Valuing each input using market prices.
  d. Adding together to get the total cost of production.

  **NB:** Raw materials which are the ingredients for a particular business operation.

  - Direct labour, which are all the cost of all labour that is directly involved in production of the good, including the owner’s wage.
  - Overheads, which are all the other costs which cannot easily be allocated to each item that is produced, eg.
    - Rent, lubricant, packaging cost
    - Administrative cost
    - Cost of interest and depressions etc.

Divide total cost by total output to obtain the average cost per unit of output.

• Pricing means deciding on the price that you charge for your products.

• To be able to determine your price, you will have to know all the costs that are involved in producing and selling your product (Direct and indirect cost).

• When you sell your products for a price that is higher than the costs to produce then you are making a profit.

• When you sell your product for a price that is lower than your costs then you are selling at a loss.

• When you sell your product for a price that is equal to your cost then you break even.

*Explain to participants factors considered in determining the price. These include:*

• The costs of each product (your expenditure).

• The profit you would like to make.

• The price other people are selling the same product for.

• The maximum price people are prepared to pay.

• The price is determined by the market

  • Price = Cost + Profit

*Summary:* Summarise what record keeping, costing and pricing entails.

*Question:* Ask if anyone has questions or comments.

*Evaluation:* Ask them their understanding about record keeping, costing and pricing.