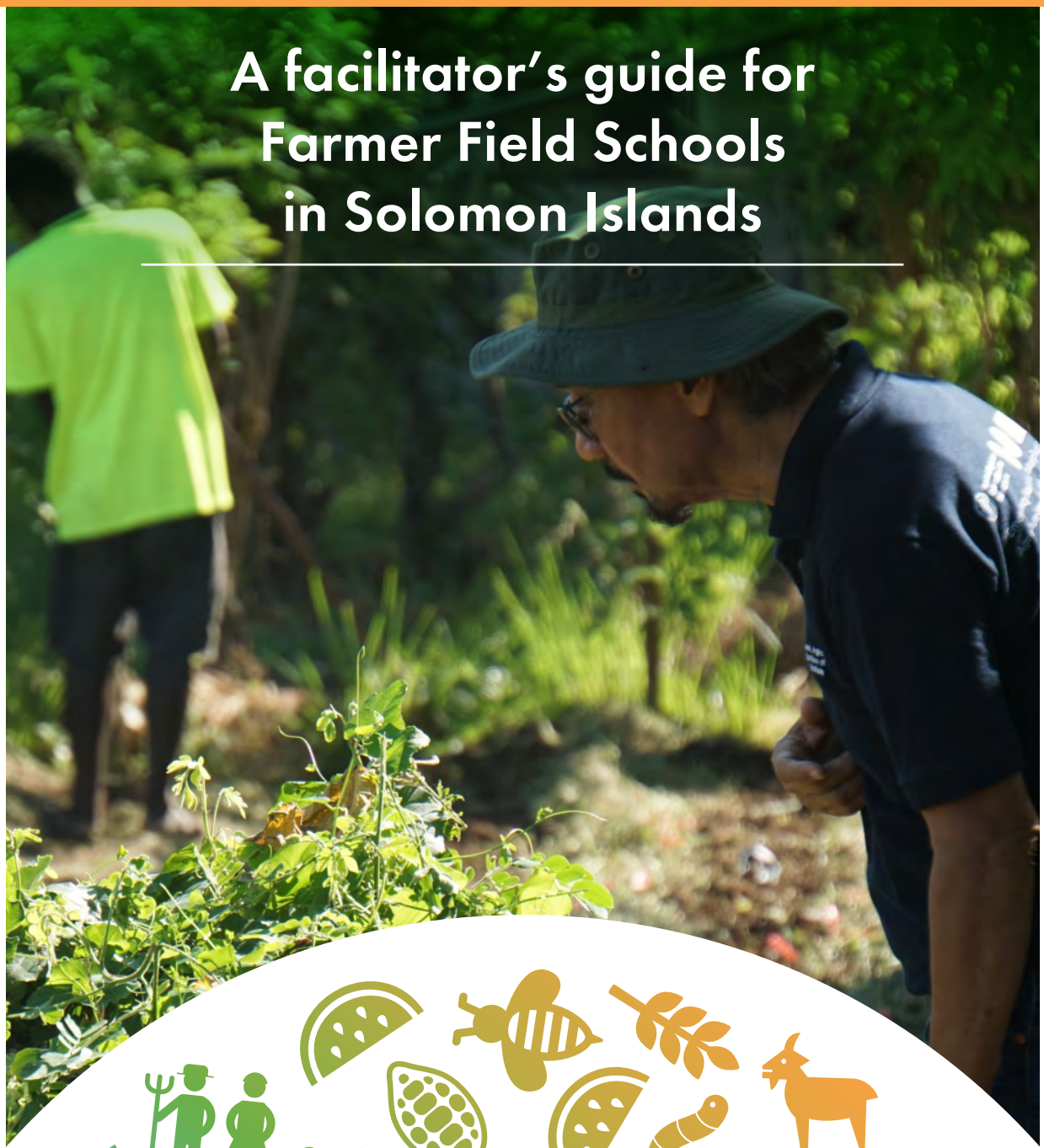
Food and Agriculture Organization of the United Nations

A facilitator's guide for Farmer Field Schools in Solomon Islands



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A facilitator's guide for Farmer Field Schools in Solomon Islands

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CONTENTS

PREFACE

This guide is a product of the Food and Agriculture Organization of the United Nations (FAO) under the global programme "Capacity Building Related to Multilateral Environmental Agreements in African, Caribbean and Pacific Countries Phase III" (ACP MEAs 3), funded by the European Union. The guide has been realized with the collaboration of the Kastom Garden Association (KGA), in Solomon Islands and it is the result of remarkable contributions by staff from both institutions: Ravindra Chandra Joshi (International Consultant), Tikai Pitakia (Manager of KGA), Stefano Mondovi (FAO, Innovation Officer, Farmer Field Schools) and Johannes Ketelaar (FAO, Regional Farmer Field School Coordination and Innovation Specialist). FAO and KGA also collaborated on the establishment of four Farmers Field Schools (FFSs) in Solomon Islands and provided field training on integrated pest management, according to this guide.

FAO recognizes biodiversity and ecosystem services as the basis for sustainable food production and resilient livelihoods. In the face of the growing challenges of climate change and biodiversity loss, FAO leads the global agenda on mainstreaming biodiversity across agricultural sectors for sustainable agrifood systems. The ACP MEAs 3 programme aims to enhance sound biodiversity and agrochemical management working at the national, regional and global levels.

This comprehensive guide equips facilitators in Solomon Islands to conduct impactful Farmer Field Schools (FFSs) focused on integrated pest management (IPM) practices.

The guide consists of guidelines to empower extension staff, non-governmental organization (NGO) personnel, and experienced farmers to become skilled facilitators.

The guide goes beyond a simple curriculum, offering a detailed framework for planning, implementing, evaluating, and even following up on FFS programmes. By building upon available resources from FAO and other international programmes, the guide ensure that its content complements established best practices. Notably, it holds the distinction of being the first such resource specifically designed for the unique needs of the South Pacific region.

However, this guide prioritizes practical application over theory. While acknowledging the value of classroom instruction, the core objective lies in providing facilitators with a rich toolbox of field-tested exercises. These exercises promote discovery-based learning. The guide emphasizes adaptability, offering facilitators a diverse selection of exercises proven effective in FFS programmes across Asia, Africa, and Central and Eastern Europe. Importantly, it encourages facilitators to tailor these exercises to the specific conditions of their location ensuring the programme remains relevant and impactful for participating farmers.

In essence, this guide is not a rigid set of rules, but rather an inspirational resource. It empowers facilitators to move beyond simply following instructions and to build effective FFS programmes based on practical methods that can be readily adapted to their local context.

ABBREVIATIONS

AESA	Agroecosystem analysis
CAP	Community Action Plan
CEP	Community Extension Programme
FAO	Food and Agriculture Organization of the United Nations
FFS	Farmer Field School(s)
ILM	Integrated Livestock Management
IPM	Integrated pest management
IPPM	Integrated Production and Pest Management
MEL	Monitoring, evaluation and learning
NGO	Non-governmental organization
PPE	Personal protective equipment
SOM	Soil organic matter
WHC	Water holding capacity

INTRODUCTION

Solomon Islands: balancing subsistence with commercial agriculture

The agricultural sector of Solomon Islands is at a critical juncture. Although subsistence farming ensures basic food security for rural communities, it limits the nation's ability to generate export revenue and achieve broader food security. Despite cultivating cash crops such as cocoa and coconut, the islands rely heavily on imports of rice, vegetables and meat – products that they can produce domestically.

Several obstacles hinder agricultural development. Limited infrastructure, particularly in transportation and storage, makes it difficult and expensive for farmers to bring their produce to market. The islands' vulnerability to climate change and natural disasters further threatens harvests and livelihoods. Additionally, complex land ownership systems create barriers to investment and progress in agriculture.

However, there are opportunities for growth. Government initiatives and international support programmes aim to enhance extension services, promote high-value crops, and reduce reliance on imports. Diversifying into crops such as spices and organic produce as well as integrating trees into traditional farming practices can boost income and sustainability. Embracing new technologies and agricultural practices can also improve yields and efficiency.

In conclusion, the agricultural sector in Solomon Islands holds significant potential to drive economic growth and national food security. By addressing current challenges and leveraging available opportunities, Solomon Islands can transform its agricultural sector into a powerful engine for development.

Farmer Field Schools: empowering Solomon Islands' agriculture

The Solomon Islands' agricultural sector is brimming with potential, but traditional subsistence farming and various challenges obstruct its path to commercial success and national food security. Farmer Field Schools (FFSs) emerge as a powerful tool to overcome these hurdles, offering distinct advantages over conventional training and extension methods.

Traditional methods often rely on a top-down approach, with researchers and extension agents simply disseminating knowledge to farmers. In contrast, FFS adopt a participatory approach where farmers engage directly in experimenting with new techniques, analysing results, and sharing experiences with peers in their fields. This hands-on learning fosters a deeper understanding and greater buy-in than passive learning methods.

Beyond traditional training: the power of FFS

This shift in approach unlocks several advantages for Solomon Islands:

- **Empowerment and knowledge retention**: FFS equip farmers with the skills and confidence to solve problems and make informed decisions tailored to their local context. This fosters a sense of ownership and increases the likelihood of sustained adoption of new practices beyond the programme's duration. Farmers are not merely following instructions, but are also actively learning and adapting for long-term success.
- **A focus on sustainability**: The curriculum emphasizes sustainable practices such as crop diversification and integrated crop management; this prepares farmers to navigate climate change challenges and build long-term resilience. FFS prepare farmers for the future, not just for the next harvest.
- **Farmer-to-farmer learning**: FFS create a collaborative environment where farmers learn from each other's successes and failures, strengthening social networks, and creating a support system for ongoing knowledge sharing – farmers aren't just

learning from facilitators, but are also learning from their peers, creating a stronger and more adaptable community.

- **Cost-effectiveness**: FFS leverage local resources and farmer participation, making them more cost-effective than traditional training programmes that require extensive travel and expensive materials – this allows for wider implementation and greater impact.

While there are challenges such as facilitator training and scaling up, FFS offer a unique and impactful approach. By fostering a culture of experimentation, knowledge sharing and sustainable practices, FFS empower farmers to become active participants in transforming the agricultural sector into a driver of economic growth and food security.

In summary, FFS present a valuable strategy for Solomon Islands. With a focus on long-term sustainability and effective facilitator training, FFS can unlock the full potential of the agricultural sector and increase revenue for producers and food security.

CHAPTER 1

Basic concepts and facilitation of a Farmer Field School (FFS)

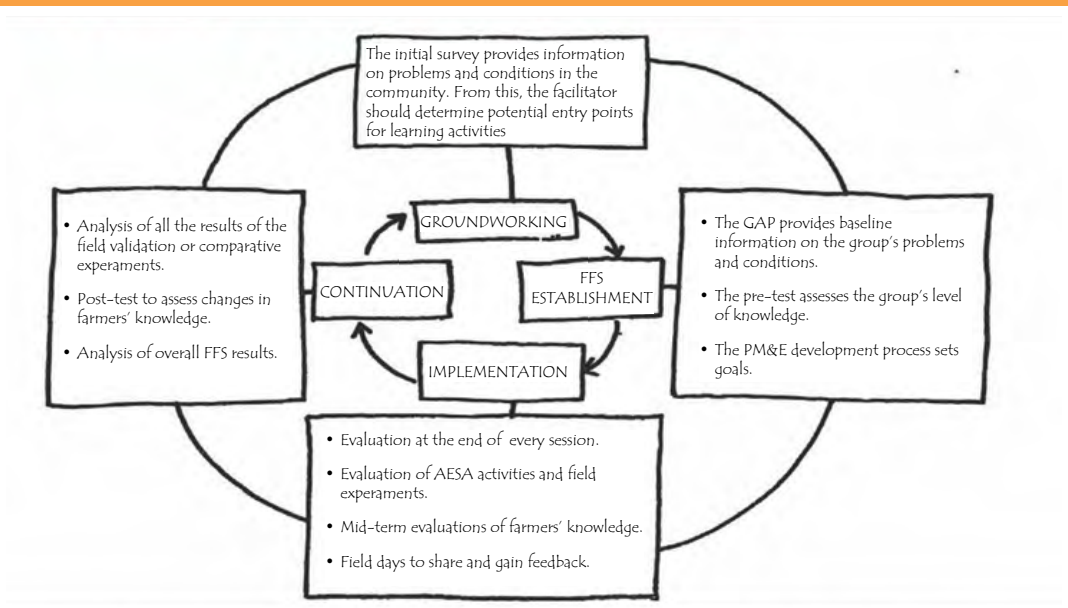
1.1 Definition of a Farmer Field School

A Farmer Field School (FFS) is a structured group of 20 to 30 individuals, such as farmers and breeders, who regularly come together in their local community to address agricultural production challenges specific to their region. They are supported by a facilitator and utilize non-formal adult educational methods. These challenges may involve various crops such as sweet potato, taro, cassava and yams, as well as vegetables, rice, coconut, cocoa, and small livestock such as chickens and pigs.

Functioning as a 'school without walls', the FFS provides a flexible and practical learning environment within the production systems of Solomon Islands.. This setup encourages the sharing of knowledge and experiences among participants, empowering them to tackle issues using locally relevant solutions. In the FFS model, farmers are at the core of the learning process, actively involved in diagnosing problems, experimenting with potential solutions, evaluating outcomes, and sharing knowledge. This active participation ensures that proposed solutions are not only suitable for the context, but also environmentally sustainable.

Throughout the learning cycle, participants engage in hands-on activities and discussions tailored to their specific agricultural challenges, with the facilitator's guidance. For example, in root crop cultivation, participants may explore methods for pest and disease management or techniques to improve soil fertility. Similarly, topics in coconut and cocoa farming might include sustainable harvesting practices and

Figure 1. The process of running a Farmer Field School



Source: Okoth, J.R., Nalyongo, W. & Bonte, A. 2010. *Facilitators' Guide for Running a farmer field school: An adaptation to a post emergency recovery programme*. FAO Uganda.

Note: *GAP=good agricultural practices; PM&E=participatory monitoring and evaluation.*

post-harvest processing methods. In small livestock management, discussions could focus on breeding techniques, disease prevention and appropriate feeding practices.

The duration of an FFS cycle in Solomon Islands varies depending on the crops or livestock studied. The FFS approach is a season-long learning process, but the learning cycle can span multiple seasons to allow for comprehensive observation and experimentation. Weekly meetings are preferred to maintain momentum and encourage continuous learning and adaptation. Longer intervals between meetings can slow down progress and hinder effective knowledge sharing among participants (Figure 1).

1.2 Objectives of a Farmer Field School

The main objectives of FFS in Solomon Islands are to empower farmers with the necessary knowledge and skills to enhance agricultural productivity and livelihoods, enabling them to make informed decisions about their farming practices. Through these programmes, farmers gain insights into sustainable farming practices, such as organic farming and natural pest control methods, promoting environmentally friendly approaches.

By fostering resilience to climate change impacts, FFS aim to ensure the long-term sustainability of agricultural activities and enhance food security in Solomon Islands.

Ultimately, the goal is to equip farmers with the tools and practices needed to adapt to changing environmental conditions and improve their overall agricultural outcomes.

The specific objectives pursued through the FFS can be summarized as follows:

- Empower farmers by strengthening their knowledge and skills in crop cultivation, pest and disease management and soil fertility, enabling them to become technical experts in their production systems.
- Sharpen farmers' ability to make critical and informed decisions to increase the profitability and sustainability of their operations.
- Promote new ways of thinking and problem-solving, assisting farmers in better managing their daily lives and communities.
- Improve group decision-making capacity;
- foster collaboration among farmers, extension agents and researchers to enhance resilience to climate change.
- Improve market access, promote gender equality, and enhance farmer autonomy.
- Support crop diversity by cultivating diverse crops for improved nutrition and income generation.
- Enhance environmental conservation by raising awareness and advocating sustainable land management practices.

In conclusion, the objectives of FFS in Solomon Islands aim to empower farmers with the necessary tools and knowledge to improve their agricultural practices while fostering resilience, sustainability and collaboration within their communities.

These objectives include strengthening farmers' technical expertise, enhancing decision-making skills, promoting innovation, supporting crop diversity, fostering environmental conservation, and facilitating collaboration among stakeholders.

1.3 Basic principles of a Farmer Field School

The FFS approach is founded on basic principles inspired by the fundamental principles of non-formal adult education.

Principle 1: *Learning through action*

Adults learn best through experience and not passive listening (i.e. simply hearing information without actively engaging with it). In FFS, participants engage directly in activities, emphasizing discovery-based learning. As the proverb says, "I hear and I forget. I see and I remember. I do and I understand."

Principle 2: *FFS learning follows a crop's or livestock's life cycle*

To enable farmers participating in FFS to become experts, the learning programme must closely follow the stages of a plant's growth cycle (phenological profile) or the life cycle of small livestock such as pigs or chickens.

For crops, this progression typically involves stages from seed selection and preparation, planting, growth and development, and pest and disease management, to harvest and post-harvest handling.

For small livestock, it involves stages from birth or acquisition, rearing, feeding, health management and reproduction, to marketing or slaughter. Each stage corresponds to specific training themes that address the challenges faced by farmers.

The facilitator must remain flexible, adapting to the realities observed during agroecosystem analysis (AESA) activities, which may dictate focusing on a theme appropriate to the situation rather than a predetermined one for the day.

Principle 3: *Learning activities are decided by farmers*

In FFS, it is the farmers, not the facilitator, who decide what they want to learn. They choose topics that are important to them about which they want to know more. This way, the lessons are about things that farmers really need and care about. The facilitator's role is to help the farmers learn by organizing activities where they can try new things and learn from their experiences.

Principle 4: *Learning from mistakes*

Learning is a journey that requires time and patience. It involves open communication, confrontation, acceptance and respect. Making mistakes is an essential aspect of learning because we often learn more from our them than from our successes. Each learner has their own unique experiences and realities, contributing to their growth and understanding.

Principle 5: *Learning takes place in the field*

In FFS, the field is the main learning tool; all activities are organized around it. In FFS for livestock, both animals and grazing areas are essential for learning. Farmers have hands-on experience, directly observing and harvesting in their fields instead of relying solely on written materials such as books or pictures. They learn by doing, touching and seeing things for themselves. Additionally, farmers create their own learning materials, such as drawings, based on their observations, enhancing their understanding and retention of knowledge.

Principle 6: *Extension agents are facilitators, not teachers*

In FFS, extension agents take on the role of facilitators rather than teachers. Hence, their main responsibility is to help farmers learn, not to lecture or instruct them as traditional teachers do. Facilitators guide the learning process by encouraging discussions, asking questions, and fostering collaboration among farmers. They aim to create an environment where everyone can participate and share their knowledge and experiences.

Facilitators undergo formal training called Training of Facilitators, which is specifically designed to train them on how to effectively

lead FFS sessions. This training is developed by master trainers specialized in FFS methodologies.

Additionally, researchers and specialists are often involved in FFS to provide technical and methodological support. They work alongside facilitators, helping them to address complex agricultural challenges and providing expert advice when needed. However, their role is not to teach in a traditional sense, but rather through an action-research process, establishing a dynamic collaboration, which ensure that the knowledge and solutions developed are practical and relevant to the farmers' needs and circumstances.

Principle 7: *Income sustains learning*

In FFS, it is crucial to have an income-generating activity alongside the learning, such as starting a business or project that makes money, like growing crops to sell or raising animals for meat. By having this income, the FFS group can sustain their activities over time. It also makes the group more independent because they don't have to rely as much on outside support.

Having an income-generating activity also has other benefits. It strengthens the social bond within the FFS group by working together towards a common goal. It gives them a sense of ownership and pride in what they're doing. Additionally, it helps them improve their livelihoods. Overall, having an income-generating activity alongside the learning helps to ensure the long-term success and sustainability of the FFS group.

Principle 8: *There is strength in numbers*

This principle implies that when people work together as a group, they are stronger. When farmers join forces, they have more power than if they work alone. Think of it like this: one stick is easy to break, but a bundle of sticks is much harder to break. Similarly, when people come together as a group, they can achieve more and have a bigger impact.

Being part of a group makes people stronger. When farmers work together, their voice in the community becomes more powerful. By joining forces, they can create stronger and better ideas. The FFS believes in this idea, that "1 + 1 = 3"; i.e. when two thoughts or ideas come together, they create something even better.

Principle 9: *Each FFS is unique*

Each FFS of Solomon Islands is distinct, reflecting the diverse needs and challenges of local communities. The topics for learning are chosen by the farmers themselves, responding directly to the pressing issues they face in their villages, such as improving cassava cultivation or managing coconut pests. Training activities are adapted to suit the abilities of the farmers, considering factors such as literacy levels and the unique geographic and climatic conditions of their islands. Each FFS is tailored to the specific needs and contexts of Solomon Islands farmers, allowing participants to actively develop their own learning materials through drawings, charts and role-playing, incorporating local examples and traditional knowledge in their lessons.

Principle 10: *The training process should be tailored*

In Solomon Islands, FFS must be designed to meet local needs in a systematic way. The key steps are observation, group discussion, analysis, decision-making and action planning. Past experiences from other countries show that learners achieve the best results when they meet weekly; longer intervals slow down learning.

The duration of FFS cycles vary depending on the activity. For instance, when learning about root crops like cassava, taro or sweet potatoes, the cycle may cover the period from planting to harvest. In chicken farming, it can involve chick

rearing, egg laying and meat production.

Similarly, in pig farming, it may include breeding, feeding and marketing stages. FFS programmes are also starting to include marketing and manufacturing activities, which allows for flexible cycle durations.

1.4 Basic actions in Integrated Production and Pest Management

Integrated Production and Pest Management (IPPM) focuses on understanding pest issues in the field and using a variety of methods, prioritizing natural solutions before resorting to chemicals. This reduces reliance on pesticides and fosters a more sustainable environment.

Any technology developed within the framework of producer field schools in Solomon Islands must adhere to the principles of IPPM for crops and Integrated Livestock Management (ILM) for livestock.

IPPM and ILM are not simply technological packages adopted by farmers, but rather, they are holistic approaches to farming that involve decision-making and cultural or breeding practices. These practices evolve gradually through observation and knowledge gained about the plant or animal and its environment. There are four key principles that form the foundation of IPPM and ILM.

Action 1: *Produce a healthy crop or animal*

A healthy crop or animal is better equipped to defend itself against pests and diseases, which is crucial for livelihoods and ensures food security and income generation.

How to produce healthy crops:

- **Selecting suitable varieties**: Farmers should choose crop varieties that are well-suited to the local climate and soil conditions, for example, drought-resistant varieties of taro or sweet potatoes for areas prone to dry spells.
- **Using healthy seeds and plants**: Using quality seeds from reliable sources ensures that the crops start off healthy, for instance, sourcing certified (disease free) planting materials of sweet potato or cassava or yams to avoid diseases.
- **Proper soil preparation and management**: Good soil health is essential for healthy crops – farmers should practise soil conservation techniques like mulching or cover cropping to prevent erosion and maintain soil fertility.
- **Effective pest management**: Integrated pest management (IPM) techniques should be used to control pests while minimizing harm to the environment, for instance, using traps or biological control methods to manage pests in vegetable gardens.
- **Crop rotation**: Rotating crops helps to break pest and disease cycles, and maintains soil fertility; for example, rotating taro with legumes like beans or peanuts helps replenish soil nutrients.

How to raise healthy livestock:

- **Habitat management:** Providing a suitable environment for livestock is crucial, for example, ensuring that chickens have access to shaded areas to prevent heat stress.
- **Disease control (including vaccination)**: Regular vaccinations and preventive measures help prevent diseases in livestock, for instance, vaccination of pigs against common diseases like swine fever.
- **Improved diet**: Livestock need a balanced diet for optimal health; for example, pigs should be provided with a mix of locally available feedstuff such as cassava leaves and coconuts for a balanced diet.
- **Understanding external factors**: Farmers need to understand how external factors such as climate and pests affect livestock productivity, for instance, adapting chicken

housing to withstand heavy rains and high humidity.

By following these practices, farmers in Solomon Islands can produce healthy crops and livestock, thus reducing the need for chemical inputs and promoting sustainable agriculture.

Action 2: *Regularly observe the crops and animals, and their environment*

In Solomon Islands, IPM and animal husbandry practices rely on regular observations of crops and animals in their natural environment. This proactive approach allows farmers to manage their farms effectively and make informed decisions.

Key points to consider:

- **The basis for farm management decisions:** Regular observations serve are essential; for example, farmers observing yellowing leaves on their cassava plants may decide to adjust their fertilization regimen to address nutrient deficiencies. Similarly, if farmers notice the presence of aphids on their vegetable crops or symptoms of banana leaf wilt disease in their plantations, they can take appropriate actions to manage these issues.
- **Learning about farm conditions**: Regular and careful observation of crops, animals and their surroundings provides valuable insights into farm conditions; for example, noticing signs of pest infestation early, such as chewed leaves on sweet potato vines, allows farmers to take timely action to control pests. Similarly, if farmers observe stagnant water in their rice fields, they may anticipate an increase in mosquito populations and take preventive measures.
- **Anticipating problems**: Periodic observations are essential for anticipating and preventing potential problems; for example, observing signs of waterlogging in root crop fields after heavy rain prompts farmers to improve drainage to prevent crop damage. Similarly, if they notice a decline in fish activity in their aquaculture ponds, they may investigate water quality issues or disease outbreaks.
- **Timing of observations**: It is crucial to schedule observations at the right time of day. In Solomon Islands, observations should be made in the morning when temperatures are cooler and insects are less active to allow farmers to accurately assess crop health and pest presence without disturbances.
- **Adaptive management**: After each observation, farmers determine the timing of the next observation based on farm conditions; this adaptive approach ensures that actions taken align with the current state of the crop or animal observed. For instance, if farmers notice signs of disease among their poultry flock during an observation, they may schedule more frequent health checks to monitor the situation closely.

By regularly observing crops, animals and their environment, farmers in Solomon Islands can effectively manage their farms, anticipate problems, and implement timely interventions to ensure optimal productivity and sustainability.

Action 3: *Protect natural enemies*

In nature, big animals live longer and have fewer offsprings (babies), while small animals have shorter lives and many offspring. For instance, aphids, a common pest in Solomon Islands, can have over 100 babies in a month. Despite this high reproductive rate, we aren't overwhelmed by aphids and other pests because of various factors that control their populations. These factors include adverse weather conditions and the presence of natural enemies.

Natural enemies in Solomon Islands, such as ladybugs, lacewings and certain wasps, are beneficial insects that prey on crop pests like aphids and caterpillars. By keeping these pests in check, natural enemies help maintain a

balanced ecosystem in farms. Therefore, in IPM, farmers in Solomon Islands should:

- learn about the natural enemies found in their fields by regularly observing their farms;
- avoid using chemical pesticides that harm natural enemies whenever possible; this practice helps prevent pest outbreaks and ensures a more sustainable farming environment, which helps to protect natural enemies, reduce the risk of pesticide resistance, and create a more sustainable farming environment. In addition, chemical pesticides should only be used as a very last resort, when all other methods have failed to control the pest population.

Action 4: *Encourage farmers to become experts*

Farmers become experts through hands-on learning and practical experience. As adults, they learn best by doing, rather than through lectures or demonstrations. Farmers are encouraged to explore and discover solutions for themselves. They develop skills, knowledge and experiences that they apply to make informed decisions about managing their farms.

For example, when farmers engage in learning activities that cover the entire production cycle of a plant, from planting to harvest, they gain a comprehensive understanding and expertise in crop cultivation. By experiencing each stage first-hand, they learn about soil preparation, planting techniques, pest and disease management, and harvesting methods.

Similarly, in livestock farming, farmers become experts by actively participating in all stages of animal husbandry, including breeding, feeding and health management. Through practical experience, they develop the skills needed to raise healthy and productive animals.

Overall, by engaging in hands-on learning that spans the entire production cycle, farmers in Solomon Islands become experts in their chosen focal learning activities. This empowers them to make informed decisions and effectively manage their farms.

1.5 Main activities of a Farmer Field School

The working framework of all FFS is based on five main activities integrated into each training session, as described below.

Activity 1: *Conducting an agro-ecosystem analysis*

AESA is the cornerstone of the FFS approach and is based on the ecosystem concept, whereby each element of the field or farm has its own unique role (Figure 2). In Solomon Islands, AESA helps farmers understand how different elements of their farms interact and affect each other. For example, farmers might observe how planting taro alongside banana trees helps retain soil moisture and prevents erosion.

Moreover, AESA teaches strategies to manage specific pests and challenges within the agroecosystem. For instance, it suggests clearing away dead and decaying plant material where the coconut rhinoceros beetle breeds, or introducing natural predators like parasitic wasps. Additionally, farmers learn about companion plants such as neem or garlic that can repel these beetles.

Furthermore, AESA educates farmers about cultural practices such as crop rotation, or using row covers to reduce populations of pests like flea beetles. Farmers also discover ways to encourage the presence of natural predators of flea beetles, such as ladybugs, to maintain a balanced ecosystem.

Through AESA, farmers gain a comprehensive understanding of their farm's ecosystem dynamics and learn effective management strategies that minimize reliance on chemical pesticides.

AESA exercises involve various steps:

- **Field observations**: Farmers observe and note down various aspects of their farm, such as crop health, soil condition, pest presence and natural resources.
- **Data collection**: Data on these observations are collected, often through simple sketches or diagrams.
- **Subgroup discussions**: Farmers then discuss their observations in small groups, sharing insights and experiences; the discussion may

Figure 2. The agro-ecosystem analysis

1. Observing

2. Analysing and recording findings

3. Presentation of findings to obtain feedback

4. Deciding on actions to take

Source: Okoth, J.R., Nalyongo, W. & Bonte, A. 2010. *Facilitators' Guide for Running a farmer field school: An adaptation to a post emergency recovery programme*. FAO Uganda.

then take place in plenary, with the other subgroups.

- **Data analysis**: Groups analyse the collected data to identify patterns and trends.
- **Recommendations**: Based on the analysis, recommendations are made for farm management practices.

AESA exercises improve decision-making skills by:

- **increasing observation capacity**: farmers become more skilled at noticing subtle changes in their farm environment;
- **developing skills in data transcription**: farmers learn to record their observations accurately using sketches or diagrams;
- **promoting discussions and sharing of experience**: group discussions foster the sharing of knowledge and experiences among farmers; and
- **developing thematic presentation techniques**: farmers learn how to present their findings to the larger group, facilitating joint decision-making.

For instance, if farmers observe pest damage on their sweet potato vines, they may decide to introduce companion plants that repel pests or release natural predators to control pest populations. This approach helps farmers make informed decisions to improve farm productivity and sustainability.

Activity 2: *Conducting comparative field experiments*

Comparative field experimentation is a collaborative process aimed at solving local agricultural problems. In Solomon Islands, this involves conducting simple experiments to understand the causes and effects of major production and environmental protection issues. These experiments allow farmers to gather practical knowledge and evidence on what works best in their specific conditions.

For instance, farmers in Solomon Islands might conduct the following experiments:

1. **Sweet potato varieties**: Farmers might experiment with different varieties of sweet potatoes to identify those best suited to local soil and climate conditions. This experimentation can reveal which varieties yield higher quantities, have better resistance to pests and diseases, or grow more efficiently in specific microclimates.
2. **Taro and banana intercropping**: Farmers might compare the yield and soil health benefits of planting taro alongside banana trees versus planting them separately. This experiment helps determine whether or not intercropping improves soil moisture retention, reduces erosion, and enhances overall productivity.
3. **Poultry rearing techniques**: In addition to crops, comparative field experiments can focus on small livestock. Farmers might experiment with different poultry-rearing techniques such as free-range versus confined systems to determine which method maximizes egg or meat production while minimizing feed costs and disease risks.
4. **Pig feeding strategies**: Farmers might experiment with various pig feeding strategies such as different diets or feeding schedules to optimize pig growth and health.

These experiments also aim to validate and promote the adoption of new technologies or practices suitable for the local context, such as:

- **Conservation agriculture techniques**: Farmers might experiment with conservation agriculture practices such as minimum tillage or mulching to improve soil fertility, water retention and crop yields.
- **IPM**: Comparative experiments can assess the effectiveness of IPM strategies such as using pheromone traps or beneficial insects to control pests while minimizing pesticide use.

- **Climate-resilient crop varieties**: Experimentation with climate-resilient crop varieties helps farmers adapt to changing climate conditions and ensure food security.

By conducting comparative field experiments, farmers in Solomon Islands gain valuable insights into which agricultural practices are most effective and sustainable for their specific circumstances. This hands-on approach empowers them to make informed decisions and continuously improve their farming methods.

Activity 3: *Facilitating the topics of the day*

Before diving into hands-on activities, it's important to have some basic technical knowledge. This is particularly crucial in places like Solomon Islands, especially in agriculture. For instance, farmers need to learn how to identify common pests and diseases, understand their lifecycle and behaviour, and know effective control measures. Facilitators help by providing this information through presentations, demonstrations and discussions, making sure that farmers understand and can implement activities effectively.

Activity 4: *Monitoring, evaluation and learning*

Monitoring, evaluation and learning (MEL) is crucial for FFS; it ensures that the programme stays on track by regularly assessing progress and effectiveness. Participants and facilitators collaborate to establish a system to monitor and evaluate the FFS programme's performance. They analyse training sessions and assess the impact of field experiments on crop yields, pest control and soil health. Insights from MEL guide positive changes, such as modifying training materials or adjusting activities. In summary, MEL involves a collaborative effort in continuously assessing the FFS programme's progress, ensuring that it meets its objectives and brings positive changes to agricultural practices.

Activity 5: *Group dynamics exercises*

Group dynamics exercises are used to create a positive learning environment, facilitate learning, and encourage reflection and sharing among participants. They also help develop leadership, communication and problem-solving skills. In Solomon Islands, these exercises might include team-building activities, role-playing scenarios and group discussions to promote collaboration and mutual learning.

Group dynamics exercises

1. **Icebreakers**: Activities like '**Two Truths and a lie**' or '**Human Knot**' help participants feel relaxed and comfortable, fostering communication and teamwork.
2. **Focus and Learning**: Role-playing scenarios and discussions encourage active participation and knowledge sharing, allowing participants to learn new skills and information.
3. **Energy Boost**: Short energizers like '**Simon Says**' or dance breaks help maintain focus and re-engage participants during long sessions.
4. **Staying on Track**: Setting clear goals and reminding participants of them keeps the group focused on the topic and learning objectives.
5. **Communication**: Group discussions where participants share experiences and insights promote knowledge sharing and a deeper understanding of the topic.
6. **Shared Goals**: Brainstorming sessions help bridge individual expectations with the group's programme goals, fostering alignment and collaboration.
7. **Active Participation**: Small group activities with assigned roles ensure

everyone contributes and learns through hands-on participation.

8. **Engaging Sessions**: Starting with a '**Question of the Day**' and ending with discussions keep participants engaged throughout this session.
9. **Skills Development**: Hands-on activities like grafting and building irrigation systems equip participants with practical skills that are directly applicable to their farms.
10. **Self-Evaluation**: Group feedback sessions encourage participants to reflect on their contributions and impact on the group, fostering self-awareness and improved collaboration.
11. **Team Building**: Exercises like '**Minefield**' or '**Trust fall**' build trust, cooperation and a more cohesive environment.
12. **Positive Learning Environment**: Comfortable seating arrangements, refreshments and a well-lit ventilated space contribute to a productive learning atmosphere.

Here are examples of how each of the group dynamics exercises listed can help in FFS:

1. **Create a relaxed atmosphere**: Icebreaker activities like **Two Truths and One Lie, and The Human Knot** serve as social lubricants, easing participants into the learning environment by encouraging interaction, cooperation and laughter. By starting with these activities, facilitators can set a positive tone for the rest of the session, where participants feel more at ease sharing their thoughts and engaging in discussions and activities.

   Two Truths and One Lie is an activity where each participant shares three statements about themselves, i.e. two truths and one lie, and the rest of the group guesses which one is the lie. This activity encourages participants to share personal information in a light-hearted manner, fostering connection and familiarity among group members. By finding commonalities and shared experiences, barriers are broken down, and camaraderie is built. Engaging in this fun and non-threatening activity helps participants feel more comfortable with each other, facilitating better communication and collaboration throughout the session.

   The Human Knot is an icebreaker where participants stand in a circle and reach across to grab the hands of two different people across the circle, creating a tangled Human Knot. The group then works together to untangle themselves without letting go of each other's hands. This activity fosters teamwork and trust because participants must cooperate and communicate to solve the problem together. By physically and mentally working closely with each other, participants build rapport and feel more comfortable, creating a relaxed and open atmosphere conducive to communication and collaboration throughout the session.

2. **Illustrate lessons**: Role-playing scenarios where participants act out real-life farming situations, such as negotiating prices with buyers or resolving conflicts with neighbours, can demonstrate negotiation skills or conflict resolution. For instance, in an FFS session on IPM, participants engage in a role-play where one acts as a farmer facing a pest infestation and another as an agricultural extension officer offering advice. This helps participants learn about pest identification, control methods and the importance of timely interventions, including through discussions on IPM and organic pesticides. By actively participating, they gain practical insights into pest management techniques applicable to real-life farming.

3. **Energize the group**: Quick energizer activities like **Simon Says** or a **Short Dance Break** can help energize participants during long sessions or after breaks, keeping them engaged and focused. **Simon Says** is a popular children's game where one person designated as **Simon** gives commands to the other players. The commands usually start with "**Simon says**" followed by an action, such as "**Simon says touch your toes**" or "**Simon says hop on one foot**". The players must only obey the commands that start with "**Simon says**". If Simon gives a command without first saying "**Simon says**", and a player follows the command, he or she is out of the game. The last player remaining is the winner. This game is often used as a fun and interactive way to engage participants, promote listening skills, and encourage movement. In the context of energizing a group, a round of **Simon Says** can serve as a quick and enjoyable activity to boost energy levels and re-engage participants.

4. **Maintain group focus**: Setting clear goals and objectives at the start of each session and periodically reminding participants of these goals help keep everyone focused on the topic. For instance, in an FFS session on soil conservation, the facilitator might begin by stating the session's objectives, such as learning erosion control techniques. Throughout the session, the facilitator can remind participants of these objectives to ensure that discussions and activities remain relevant to the topic. This approach helps prevent distractions and keeps the group on track towards achieving its learning goals.

5. **Encourage communication among participants**: Group discussions where participants share their farming experiences, challenges and successes promote communication and knowledge sharing. For instance, in an FFS session focusing on crop rotation, participants might discuss their experiences with different crop sequences and the outcomes they have observed. By sharing insights and learning from each other's experiences, participants engage in meaningful communication that enhances their understanding of the topic.

6. **Bridge individual expectations with group realities**: Brainstorming sessions are where participants share their personal goals and expectations for the programme and then discuss how these align with the group and FFS programme objectives. For instance, in an FFS session on sustainable agriculture, participants might express their goals, such as increasing crop yield or adopting organic farming practices. Through group discussion, they can explore how these individual aspirations fit into the broader goals of the FFS programme, fostering alignment and shared understanding among participants.

7. **Ensure that everyone participates and learns**: In small group activities, each participant is assigned a specific role or task, ensuring active participation and learning for all. For instance, in an FFS session on soil fertility management, participants might engage in a soil-testing activity where each person is responsible for collecting soil samples, analysing results or interpreting data. By actively participating in these tasks, everyone contributes to the learning process and gains valuable insights into soil fertility management techniques.

8. **Introducing or concluding a session**: Starting a session with a **Question of the Day**, or ending with a reflection activity where participants share one thing they have learned, effectively bookends the session. For instance, in an FFS session on water conservation, the facilitator might start by asking, "**What are some challenges you face in conserving water on your farm?**" This sets the tone for discussion and learning. At the end of the session,

participants can reflect on key takeaways, such as sharing a water-saving technique they plan to implement. These activities ensure engagement from the beginning to the end of the session.

9. **Fostering the development of new skills**: Hands-on activities like **Using Grafting Techniques** or **Constructing Simple Irrigation Systems** help participants develop new agricultural skills. For instance, in an FFS session on fruit tree management, participants might practise grafting techniques by grafting different fruit tree varieties onto rootstocks. Another example is constructing a simple drip irrigation system, where participants learn how to assemble and install irrigation components. These practical activities enable participants to acquire new skills that are directly applicable to their farming practices.
10. **Provide new perspectives on self-evaluation, especially regarding group impact**: Group feedback sessions where participants offer constructive feedback on each other's contributions and performance during group activities prompt individuals to reflect on their actions and their impact on the group. For instance, in an FFS session on pest management, participants might engage in a feedback session where they discuss each other's contributions to a group activity, such as identifying pest-resistant crop varieties. This allows individuals to gain insights into how their actions affect group dynamics and fosters self-awareness for improved collaboration.
11. **Build a more cohesive team**: Team-building exercises such as **Minefield** or **The Trust Fall** help build trust and cooperation among participants, fostering teamwork and unity. For instance, in an FFS session focusing on IPM, participants might engage in a minefield activity where they guide a blindfolded teammate through a simulated minefield of obstacles using verbal communication only. Another example is **The Trust Fall**, where participants take turns falling backward, trusting their teammates to catch them. These exercises strengthen bonds and promote collaboration, enhancing the overall cohesion of the group.
12. **Establish a pleasant and productive learning environment**: Creating a comfortable physical environment with conducive seating arrangements and providing refreshments during breaks can contribute to a pleasant and productive learning atmosphere. For instance, in an FFS session on soil health, the facilitator arranges chairs in a circle to encourage open discussion and ensure that the room is well-lit and ventilated. Additionally, refreshments like water and snacks are provided during breaks to keep participants energized and focused. These simple adjustments help create a positive atmosphere conducive to effective learning.

1.6 Main success factors of a Farmer Field School

Several factors determine the success of a field school. Promoters and facilitators should pay attention to these elements. The main success factors of an FFS are summarized below.

Factor 1: *Existence of a community problem*

Participants must face significant crops or small livestock production issues, such as pest infestations, soil erosion and low crop yields, driving them to seek solutions. These problems are entry points for the field school approach, ensuring relevance. For instance, farmers in Solomon Islands must address problems with pests such as fruit flies that damage their crops, motivating them to join field schools for pest control methods.

Factor 2: *Availability of a host structure*

A host structure, often a farmer group or cooperative, supports FFS implementation, providing a platform for collaboration and resource sharing among farmers.

Factor 3: *Availability of a facilitator*

FFS require skilled facilitators with technical expertise, methodological competence, local language proficiency, and an understanding of the socio-economic context. Proper training in field school methodology and non-formal education is essential. They receive training in field school methodology and non-formal education.

Factor 4: *Existence of a group of voluntary farmers*

A dynamic group of 20 to 30 voluntary participants, organized into a manageable size, is crucial for effective learning and group dynamics. These groups may be associated with local cooperatives or community organizations.

Factor 5: *Gender considerations*

As a result of its inclusive curriculum and emphasis on fair collaboration, FFS have significant potential for gender transformation, which can be further amplified through intentional gender integration. By guaranteeing equal access and involvement for all, women and men, FFS tackle the unique challenges and opportunities faced by farming communities, advancing equity and social justice. Equipping women with knowledge and skills enhances agricultural productivity and decision-making while also encouraging more efficient and sustainable farming methods.

Factor 6: *Clear and concerted objectives*

All participants must understand the group's common interests, objectives and expected learning outcomes such as focusing on improving crop yields, enhancing soil fertility, or implementing sustainable agricultural practices relevant to Solomon Islands' context.

Factor 7: *Work schedule*

FFS activities are scheduled weekly, enabling participants to attend learning sessions while managing their farming activities. Timing is flexible in order to take into consideration cultural events or unforeseen circumstances. Sessions follow a curriculum developed from a basic analysis and are typically held on a fixed day each week, with the option to reschedule as necessary.

Factor 8: *Fields or experimental animals*

FFS feature managed crop plots or experimental animals to compare traditional and modern practices. Practical demonstrations in crop plots or small livestock rearing are conducted. For instance, farmers may compare traditional and modern farming methods for staple crops like taro or cassava.

Factor 9: *Accessibility and visibility*

FFS are situated near participant villages, ensuring easy access and visibility for all participants. Measures are taken to protect against animals and ensure accessibility for everyone, facilitating effective participation and monitoring.

Factor 10: *Monitoring and evaluating learning*

Keeping attendance records and maintaining an FFS diary help monitoring participation, progress and satisfaction. The evaluation focuses on programme implementation and participants' satisfaction, with results shared within the community.

Factor 11: *Group empowerment*

Engaging farmers in financing and managing activities fosters ownership of the learning

process and sustainability, and prepares them for continued learning after external support ends. This could involve managing community-based seed banks or organizing savings and loan groups.

Factor 12: *Taking climate change into account*

FFS technologies and practices improve productivity and help farmers adapt to and mitigate climate change. They promote resilient farming practices, such as using drought-resistant crop varieties, implementing agroforestry, and adopting water management strategies. These methods aim to reduce the impact of changing weather patterns in Solomon Islands.

1.7 Facilitation of a Farmer Field School

Facilitators in an FFS play a pivotal role in guiding the learning process in a participatory manner, ensuring effective information sharing within the group and enabling participants to share ideas, make decisions, and acquire practical knowledge.

Facilitators act as moderators, maintaining focus and productivity in discussions while creating a supportive environment for active engagement. They assist participants in conducting experiments, analysing results, and applying new knowledge to farming practices, helping farmers identify challenges, explore solutions, and adapt techniques to their contexts.

Overall, facilitators empower farmers to improve their agricultural practices through collaborative learning and skills development.

Tasks of the FFS facilitator

1. **Clearly explain the FFS objectives and process**: The facilitator should ensure that all participants understand the purpose and structure of the field school, including what they will learn and how the sessions will be conducted.
2. **Help the group have a clear vision and achieve its goals**: The facilitator guides the group in setting goals and developing a shared vision of what they want to accomplish through the field school.
3. **Manage learning time throughout the training cycle**: The facilitator organizes and manages the timing of activities and discussions to ensure that all topics are covered effectively within the allocated time.
4. **Start by explaining simpler topics and end with more complex ones**: The facilitator gradually introduces topics, starting with basic concepts before moving on to more advanced or complex ideas, ensuring that participants can grasp and build on their knowledge.
5. **Support the group of learners in identifying the causes and seeking solutions to encountered problems**: The facilitator helps participants analyse the challenges they face in farming, identify underlying causes, and work together to find solutions.
6. **Help learners set up the learning system, conduct experiments, and evaluate the results obtained**: The facilitator assists participants in designing and conducting experiments, and evaluating the outcomes, thus promoting experiential learning.
7. **Assist groups in observations, analysis and decision-making**: The facilitator guides participants in observing their fields, analysing data, and making informed decisions based on their observations and analysis.
8. **Stimulate participants to make more appropriate decisions**: The facilitator encourages participants to critically think and make informed decisions regarding farming practices, inputs and management.

9. **Show respect to all participants and their opinions**: The facilitator creates an inclusive and respectful environment where all participants feel valued and encouraged to contribute their ideas and experiences.
10. **Keep discussions lively**: The facilitator maintains engagement by facilitating dynamic discussions, asking thought-provoking questions, and encouraging active participation.
11. **Encourage learners to provide constructive criticism on activities**: The facilitator promotes a culture of feedback, where participants feel comfortable offering constructive criticism to help improve learning activities.
12. **Assist the group in promoting solidarity and social cohesion through advice and group dynamics exercises**: The facilitator fosters a sense of community among participants through team-building exercises and supportive interactions.
13. **Ensure technical monitoring**: The facilitator provides technical guidance and support to ensure that participants implement farming practices correctly and effectively.
14. **Help participants reach consensus**: The facilitator facilitates discussions to ensure that all participants are heard and help the group reach agreements or decisions.
15. **Adapt the learning programme to new realities on the ground**: The facilitator adjusts the curriculum or activities based on participants' needs, emerging challenges or changes in the farming environment.
16. **Identify potential future facilitators among learners**: The facilitator observes participants' leadership and communication abilities, identifying individuals who could potentially become facilitators for future FFS.
17. **Initiate new FFS**: The facilitator may be involved in starting new FFS in different communities or for different farming topics, applying their experience to replicate successful learning models.
18. **Help the group manage and/or transform conflicts**: The facilitator assists participants in resolving conflicts that may arise during discussions or activities. He or she promotes constructive dialogue and provide techniques to address disagreements, ensuring that conflicts are managed effectively and do not hinder the learning process. By transforming conflicts into opportunities for learning and collaboration, the facilitator helps maintain a positive and productive atmosphere within the group.
19. **Identify the appropriate time for relaxation (breaks) or group dynamics during learning**: The facilitator recognizes when the group needs a break to recharge or engage in group dynamics activities. He or she observes the energy levels and engagement of participants, scheduling breaks or group dynamics exercises accordingly. These breaks allow participants to relax, socialize and build rapport, fostering a supportive learning environment. Group dynamics activities, such as icebreakers or team-building exercises, are strategically incorporated to maintain motivation and cohesion within the group.
20. **Create links with partners, collaborators and external facilitators**: The facilitator establishes connections with organizations, experts and stakeholders who can contribute to the field school's objectives. He or she collaborates with external partners to provide additional resources, expertise and/or support to the participants. The facilitator also networks with other facilitators or organizations conducting similar programmes, enabling

knowledge sharing and mutual support. These partnerships enhance the learning experience and expand opportunities for participants to access valuable resources and information.

21. **Help participants identify potential and opportunities in their environment**: The facilitator guides participants in recognizing the potential of and opportunities in their farming environment. He or she encourages participants to observe and analyse their surroundings, identifying resources, local knowledge and existing practices that can be leveraged for improvement. The facilitator facilitates discussions and exercises aimed at exploring innovative solutions and tapping into the strengths of the community. By empowering participants to see the possibilities within their environment, the facilitator inspires creativity and resourcefulness, ultimately leading to sustainable agricultural practices and livelihood improvements.

The difference between facilitation activities and teaching

The extension agents who lead the FFS are facilitators and not teachers because their role is to guide the learning process.
While both facilitation and teaching involve supporting learning, there are key differences in their approaches and objectives. Table 1 shows some differences between facilitation activities and teaching.

Note:

- Facilitation activities involve guiding learners through an interactive process, encouraging them to explore and discover knowledge independently.

Table 1. The difference between facilitation activities and teaching

Types of traditional agroforestry systems	Teaching
Guides the learning process, encouraging active participation and discussion	Imparts knowledge or information in a one-way communication style
Focuses on problem-solving, critical thinking and collaborative learning	Emphasizes instruction and explanation of a predetermined content
Adapts to participants' needs and interests, using group activities and discussions	Follows a predetermined curriculum, often relying on lectures and presentations
Supports learners in finding solutions and discovering knowledge	Provides answers and solutions directly based on the expertise of the teacher
Supports learners in finding solutions	Provides answers and solutions directly
Empowers participants to explore and discover knowledge independently	Provides information in a structured manner
Facilitates exploration and discovery throough open-ended questions	Often used closed-ended questions to assess understanding
Creates an inclusive and participatory learning environment	Often focuses on the teachers' authority and expertise

Source: Authors' own elaboration.

- Facilitators adapt their approach to meet the needs and interests of participants, using group activities and discussions to foster collaboration and critical thinking.
- In contrast, teaching usually consists in the direct imparting of knowledge or information by the teacher, often following a pre-determined curriculum and relying on lectures and presentations to convey information.

CHAPTER 2

Preparatory phase of a Farmer Field School

2.1 Groundwork with the beneficiary community

The cornerstone of the FFS approach is addressing the genuine needs expressed by farmers, who are actively engaged in planning learning activities. Therefore, after their training, facilitators must commence basic work with the beneficiary community (e.g. farmer organizations or villages) to effectively plan the activities for implementing FFS.

This groundwork with the beneficiary community should commence at least one month before the actual establishment of the FFS.

2.1.1 Organization of a village information and awareness meeting

Goal

The goal of organizing an information and awareness meeting in the village is to ensure that everyone understands and supports the farmer training process. We as facilitators want to inform local people about the FFS and get their support.

This meeting is important because the community gets to decide if they like the plan or if they want changes. When the community makes the first decision, they are more likely to stay involved in the learning process.

Target audience

The people we want to reach with the information and awareness meeting typically include:

- professional farmer organizations (e.g. groups, associations, unions);
- local government officials (e.g. governor, administrator, village councillors, members of village development committees);
- traditional and religious leaders (chiefs, priests, pastors, influential individuals);
- individuals responsible for public or private support services (agriculture, livestock, environment);
- partners in research and development (researchers, development projects, NGOs) working in the area; and
- anyone else interested in farming or the community.

The facilitator will need to contact all these potential partners, especially those involved in farmer training, to understand how they can help and when they are available.

Procedure

The information and awareness session is led by the facilitator or a group of facilitators during a meeting or a convened village assembly, which typically lasts 2 to 3 hours. These meetings are held in the village and are open to all interested farmers.

It is important to make a strong and clear first impression. Therefore, the facilitators must explain the field school process well so that participants know what to expect.

Generally, the information and awareness session will cover the following points:

- **Introducing the promoter**: This is the organization or project supporting the field school's initiative; information on the promoter's objectives and area of coverage is provided, and on how long the promoter will be involved.
- **Explaining the field school stages**: This involves describing the different steps for setting up and running a field school, and stressing the importance of community or farmer organization involvement throughout the process.
- **Presenting key problems**: If specific problems are proposed by the promoter,

they are presented here; otherwise, the basic survey process is explained, which identifies problems and solutions to be tested in the field school.

- **Announcing criteria for selection**: Basic criteria for selecting participants of the FFS group are announced; if needed, these criteria can be adjusted based on the concerns and suggestions of participants. Quotas may be set between men and women, but all volunteers must be directly involved in the issues addressed.
- **Answering questions**: Clear and honest responses are given to all questions from participants. Enough time is allocated for the question and answer session. The assembly is encouraged to ask questions and express all concerns, expectations and fears.
- **Proposing future meetings**: A programme for upcoming meetings with the community is suggested, particularly for conducting the basic survey.

2.1.2 Conducting a baseline survey or community diagnosis

Goals

Farmers face various challenges in their activities. However, it is not possible to address all their problems quickly through the field school. It is important to take enough time to identify, in a collaborative manner, the main focus of learning in the field school. This focus should address the priority needs and interests of farmers.

The goals of the baseline survey are:

- **To obtain a description and analysis of the context.**
    - Develop a historical profile and map of available resources and services in the village benefiting from the field school.
- **To describe and analyse production systems.**
    - Identify and prioritizing livelihoods (main productive activities) in a participatory manner.
    - Develop a seasonal calendar to understand the timing of agricultural activities.
- **To identify, analyse and prioritize problems.**
    - Identify, analyse and prioritize problems perceived regarded the targeted activities (e.g. rainfed farming, market gardening, livestock) according to the promoter's instructions.
- **To identify, analyse and prioritize solutions.**
    - Identify, analyse and prioritize possible solutions for the selected, priority learning problems in the FFS.

By conducting a baseline survey or community diagnosis, we aim to understand the local context, production systems and challenges faced by farmers. This information helps tailor the field school activities to the specific needs of the community, ensuring meaningful and impactful learning experiences.

Target audience

The target audience for the baseline survey, or community diagnosis, depends on whether the field school is set up for the benefit of a village community or a specific farmer organization.

- If the FFS is for a village community, then:
    - the target audience is the entire village community;
    - it is important to involve a large audience to gather diverse opinions and

perceptions about identified problems and solutions;

- the survey should not be limited to FFS participants only; and
- the baseline survey must be conducted before selecting FFS participants.

- If the FFS is for a specific farmer organization, then:
  - the target audience consists of the participants of the farmer organization concerned;
  - similar to the village community, a diverse range of participants is involved, which ensures a comprehensive understanding of problems and solutions;
  - again, the survey should not be restricted to FFS participants; and
  - conducting the baseline survey should precede the selection of FFS participants.

By involving a broad audience in the baseline survey, we can better understand the challenges and opportunities in the village community or farmer organization, leading to more effective planning and implementation of FFS activities.

Procedure

1. **Setting up the survey**: The survey is conducted during a gathering of village communities or farmer organizations. These gatherings are open to all interested farmers and are held in the village.
2. **Phase 1**: Collecting data from the community
   - Participatory tools used
     - Historical profile: gathering information about the village's history
     - Village map: mapping out the village area and its resources
     - Livelihood directory: collecting data on the different livelihoods practised
     - Seasonal calendar: documenting seasonal activities and events
     - Daily calendar: recording daily routines and activities
     - Problem and solution matrix: identifying challenges and possible solutions.
3. **Phase 2**: Sharing survey results with the community
   - Village assembly: A meeting is convened to share the survey results with the community.
   - Facilitator's role: The facilitator presents the information collected, allowing the community to confirm or correct it.
   - Audience: The primary audience consists of those who participated in the survey, but others may also attend.
   - Context reminder: The facilitator reminds everyone about the survey's context, methodology and key findings.
   - Debate and validation: A discussion is initiated to gather feedback and validation from the community.
   - Challenges and clarifications: There may be challenges or need for clarifications on certain issues, which are addressed during the meeting.
   - Emotional climate management: The facilitator manages the emotional atmosphere of the meeting, ensuring that it remains constructive and respectful.

This process involves gathering data from the community, sharing it with them for validation, and fostering discussion to ensure the accuracy and relevance of the findings, just as before, but now adapted for a village context.

Description of the main participatory tools used during the baseline survey

The following section provides a breakdown of the ten key participatory tools utilized during the baseline survey. These tools play a vital role in gathering comprehensive data and fostering a deeper understanding of the village community.

By actively involving participants in the data collection process, we aimed to capture not only factual information, but also the lived experiences and perspectives of the villagers.

This approach is crucial for establishing a strong foundation for future interventions or programmes. Understanding the community's current practices, challenges and priorities allows to tailor initiatives that are culturally relevant and sustainable, and that effectively address their most pressing needs.

Refer to Annex 9 for a detailed description of each tool, its purpose, procedures, the benefits it offers, and the data collection process.

Tool 1: *The semi-structured interview*

This is a key tool used in FFS to gather information during baseline surveys. It allows interviewers to ask open-ended questions and follow up with more specific prompts based on the participant's responses. This flexible approach helps researchers collect rich data and gain a deeper understanding of the participant's experiences and perspectives on the topics being explored.

Tool 2: *The historical profile*

This method involves discussions with villagers, particularly elders and younger people, to create a timeline of significant events. It focuses on floods, famines, wars and other events that shaped the village's social structure, businesses and overall way of life. This helps researchers understand how the community has adapted and evolved over time.

Tool 3: *The village map*

In this participatory activity, the community creates a map together, highlighting important features such as schools, water sources and forests. It helps researchers understand how different groups within the village perceive and utilize these resources.

Tool 4: *Transects or side paths*

Here, researchers walk across the village along a chosen path, observing and recording changes in the ecosystem. This helps capture variations in land use, soil types and activities throughout the village's environment, providing a more comprehensive understanding of the village's environment. Local participation enriches the study by incorporating villagers' knowledge and observations.

Tool 5: *The inventory of livelihoods (activities)*

The inventory helps identify and rank community activities based on their importance. This participatory tool, created with the community, helps select crops and animals for educational programmes like FFS, ensuring that they address the community's most pressing needs.

Tool 6: *The seasonal calendar*

This is a community-built tool that visualizes activities throughout the year. It helps understand the rhythm of life in the village, such as planting and harvesting seasons, allowing FFS to plan their activities accordingly to best support the community.

Tool 7: *The daily calendar*

The calendar helps understand the daily routines of different groups within the village, such as women's groups. By creating separate calendars for each group, researchers can plan FFS activities that fit seamlessly into their existing schedules.

Tool 8: *Proportional stacking*

This helps understand farmers' priorities. Farmers use pebbles to represent the importance of crops or animals; the more pebbles that are added, the more important the consideration of a crop or animal. The stack of pebbles is divided to show resource allocation and identify problems affecting production. This avoids sensitive questions and provides valuable insights.

Tool 9: *The notification matrix*

The notification matrix is a communication tool used in various fields to ensure that everyone is on the same page. It's like a chart where people share their knowledge on a topic. Criteria, such as categories or details, are listed across the top; on the side are the topics being discussed. By filling the intersections with related content, participants build a shared understanding, avoiding confusion and ensuring clear communication.

Tool 10: *The problems and solutions matrix*

The problems and solutions matrix is a community empowerment tool. It helps groups identify, prioritize and brainstorm solutions for the challenges they face. This could range from agricultural issues to social problems. The community works together to choose the most effective and feasible solutions based on factors such as cost, ease of use and long-term impact.

2.1.3 Identification of Farmer Field School participants

Objective

The objective of identifying participants for the FFS is to select 20 to 30 participants who are genuinely interested in agricultural development, ensuring a balanced representation of gender and demographics. The selected participants should be motivated to learn and actively engage in the school's activities to maximize the benefits for themselves and their communities.

Procedure

1. Introduction and context setting: The facilitator begins by introducing the purpose and goals of the FFS. He or she explains how the FFS will provide opportunities for learning, skill development and knowledge sharing in agricultural practices.
2. General assembly and basic survey results: A general assembly is conducted where the results of the basic survey are shared with the community. This survey helps identify the key agricultural challenges and priorities of the community.
3. Identification of central activity: Based on the results of the basic survey and discussions during the general assembly, the central activity of the FFS is identified. This could be a specific aspect of agriculture such as crop cultivation, livestock management or sustainable farming practices.
4. Recruitment process: The facilitator proceeds to recruit participants for the FFS. It's crucial to ensure that the selection process is inclusive, transparent and participatory.
    a. **Avoiding bias**: The facilitator acknowledges the risk of bias in the selection process, such as favouring individuals who are wealthy or outspoken. The focus is on selecting participants who will benefit the most from their participation in the FFS.
    b. **Information sharing**: The facilitator reminds the community about the duration and frequency of FFS meetings, emphasizing the importance of regular attendance for effective learning.
    c. **Voluntary participation**: Participants are informed that participation in the

FFS is voluntary and that no material incentives, such as snacks, will be provided. This ensures that individuals join the FFS out of genuine interest in learning and improving their agricultural practices.

d. **Selection criteria**: Clear selection criteria of participants are outlined to guide the recruitment process. These criteria may include:
    - similarity of problems faced;
    - the participants' dependence on the central activity (e.g. farming) as a primary source of income;
    - similar educational and socio-economic backgrounds in order to foster equitable participation;
    - their proximity to the FFS learning site, preferably residing in the same village or nearby areas;
    - a lack of conflicts or tensions with other potential participants;
    - their commitment to attending all FFS sessions throughout the learning cycle;
    - their willingness to collaborate and share knowledge within a team environment;
    - their eagerness to actively engage in practical field activities and demonstrations; and
    - their genuine interest in learning and skills development, instead of just being driven by material gains.
e. **Registration process**: Time is allocated for interested community members to register their names as volunteers for the FFS. The facilitator may enlist the help of literate individuals within the community to facilitate the registration process and ensure comprehensive coverage.
f. **Deadline for registration**: If necessary, a deadline may be set for collecting volunteer registrations to streamline the selection process.

By following this detailed procedure, the FFS facilitator can effectively identify and recruit participants who are committed to the learning process, ensuring the success and sustainability of the FFS initiative in addressing agricultural challenges and promoting rural development.

Group dynamic in the experimentation plots, Guadalcanal

2.2 Establishment of the Farmer Field School

2.2.1 Organization of Farmer Field School participants

In order to effectively run the FFS, it is important to organize the participants and establish certain rules and roles within the group, as follows:

1. **Choose a name and a slogan**
    - FFS participants choose a name and a slogan that reflects the group's vision and commitment.

- The facilitator encourages creativity to ensure that the name and slogan represent the group well.

2. **Formulate internal regulations**
   - Participants formulate internal regulations to create a conducive learning environment and prevent conflicts.
   - These regulations are written and signed by all participants to ensure clarity and adherence.
3. **Elect office bearers**
   - The FFS elects office bearers within the group, consisting of a president, vice-president, secretary, assistant secretary, treasurer and assistant treasurer.
   - It's preferred not to choose leaders from other village committees in order to allow new participants to take on leadership roles and also to avoid overburdening individuals who already have multiple responsibilities.
4. **Form subgroups**
   - To enhance participation and efficiency, all participants are divided into smaller subgroups, ideally three to four, depending on the total number of participants.
   - Each subgroup appoints representatives, consisting of a president, a secretary and a timekeeper.
   - Representation should be diverse and preferably not overlap with other leadership roles to ensure equitable learning opportunities.
5. **Determine the schedule of FFS sessions:**
   - Participants agree on a day of the week for FFS sessions, avoiding local market days to ensure attendance.
   - Consideration is given to women's availability, and alternative meeting days are discussed if needed.
   - Meeting times accommodate women's household obligations, typically starting early in the morning and lasting for three and a half hours.
6. **Appoint host team**
   - A host team is designated from among the subgroups for each session to oversee activities.
   - Host team responsibilities include arranging the meeting place, ensuring cleanliness, facilitating the session, introducing guest speakers, distributing materials, and assisting with presentations.
   - The host team is selected through a random process to ensure fairness and rotation among subgroups.

By organizing participants, establishing rules, and assigning roles, the FFS operates smoothly, fostering an environment conducive to learning and collaboration among participants.

2.2.2 Identifying the focal learning activity and learning site

Identifying the focal learning activity

1. Considering past experiences: Some farmers may have previously participated in activities that were not engaging or beneficial to them. It is essential to learn from these experiences and ensure that the chosen focal activity aligns with the interests and needs of the local farming community.
2. Considering community needs and interests: The selection of the FFS focal activity is driven entirely by the needs and interests of local farmers. For example, if the community primarily cultivates, the focal activity of the FFS will be focused on improving rice production practices.

3. Addressing real-life challenges: To ensure active participation and engagement, the problems addressed within the FFS must directly relate to the realities faced by farmers on the ground. These problems should be significant enough that farmers feel motivated to seek solutions.
4. Encouraging participation in solution-focused discussions: Once the focal activity and related challenges are identified, participants and the facilitator can engage in discussions on how to move forward. This includes planning the implementation of the FFS and determining the specific topics and activities to be covered during the sessions.

By centring the FFS around the needs and interests of local farmers, and by addressing real-life challenges, the FFS can effectively engage participants and empower them to improve their rice cultivation practices in Solomon Islands.

Identifying the FFS learning site

To set up the FFS, selecting the right learning site is crucial. Here is a simplified guide on how to do it:

1. Criteria for selecting the learning site
    - Relevant to the central activity: The chosen site should be relevant to the central agricultural activity of the season; for example, if the focus is on rice cultivation, the site should be a rice field.
    - Representative of area problems: The site should represent the common challenges faced by farmers in the area, ensuring that the learning experience is relevant to the community.
    - Central and accessible: The site needs to be centrally located and easily accessible to both farmers and facilitators to ensure convenient participation.
    - Democratically selected: The site should be chosen through a democratic process involving the producers, ensuring consensus and ownership among participants.
    - Security: The safety and security of the site must be ensured to protect participants and their belongings.
    - Adequate space: The meeting place should be spacious enough to accommodate a group of 20 to 30 producers and facilitators, with provision for shelter in case of bad weather.
2. Preparation of the learning site
    - Landscaping: Before conducting activities, the site should be prepared by clearing bushes and stumps, and levelling the ground for a conducive learning environment.
    - Seating arrangement: Seating areas should be arranged in a 'U' shape so that everyone can have a clear view of the presentations. This setup also facilitates group discussions and activities; however, the arrangement may vary based on the convenience of the location.
    - Separate areas for host team: Spaces should be designated for the host team participantss to carry out their tasks efficiently, ensuring clarity of roles and responsibilities.

By following these simplified guidelines, the FFS can establish an effective learning site that meets the needs of the participants and enhances their learning experience in Solomon Islands.

Essential supplies for the learning site

To ensure that the FFS sessions run smoothly, you will need the following items, which can be locally sourced:

1. **White boards**: One or two white boards are required to be used for sticky post-its where writing or displaying information.
2. **Timetable display**: A timetable created by participants using materials like cardboard is

placed where everyone can easily see it.

3. **Clock**: A clock must be in place so that everyone can see how time is managed during sessions.
4. **Comfortable seating**: Comfortable seating areas are arranged with mats, chairs, benches or rugs to ensure that participants can sit comfortably during the sessions.
5. **Shade**: Since FFS sessions can last for several hours, shade is essential to protect participants from the sun. Most groups meet under trees for shade, but if there are no trees, consider building a temporary shelter to avoid direct sunlight.
6. **Storm shelter**: It is helpful to have shelter in case of a sudden storm. Groups can be advised on building a simple shelter using local materials.

FFS encourages self-help and use of local resources creatively for the learning process.

2.2.3 Development of the Farmer Field School learning curriculum

Goals

- Ensure that the FFS covers key learning themes according to the season, i.e. the growth phase of the crop, during the field school cycle.
- Facilitate the selection of activities and strategies to enhance learning, such as AESA, comparative field experiments, special topics and exchange visits.

The learning curriculum outlines various activities to be conducted during the FFS.

Procedure

- Solutions with the highest scores from problem identification are listed and tested in the FFS, including experiments if chosen.
- The curriculum addresses identified problems and may include special topics related to social, cultural, economic and political aspects, all scheduled at the most suitable times, considering seasonal factors.
- A detailed curriculum is beneficial for shorter FFS cycles, specifying activity dates.

Note: The learning curriculum guides the FFS cycle, and discussion topics should be displayed on a flip chart for easy reference by all participants (Table 2).

2.2.4 Development of the Farmer Field School budget and management of funds

Development of the FFS budget

- Participants should develop a detailed budget considering local availability and prices, using local equipment and financial solutions.
- All equipment and materials should be purchased by the group to foster ownership and capability.
- Mobilize funds for activities, seeking additional funds even with allocated grants.
- Ensure that purchases benefit all FFS participants, not just a few individuals.

How to manage group funds

- Learning funds are for purchasing learning materials such as seeds, compost, fertilizers and pest control products.
- Fines collected for lateness or absences can improve attendance and discipline.
- Weekly or periodic financial contributions from participants support income-generating activities.
- Income from selling FFS products is earmarked for the group's business plans.
- Financial records must be maintained diligently for transparency, including cash books, account books, receipt books, billers and expense/sales registers.

Table 2. Example of a matrix for curriculum development

Problems	Options or solution to test	What to do	Means	Period	Persons responsible
Fall armyworm attack on maize	Push and pull	Comparative experiment between a push-pull plot with Desmodium and bana grass, and a plot without Desmodium and bana grass	Certified maize and Desmodium seeds, and bana grass cuttings	October	Facilitator and learners
	Use of pheromone traps	Special topic	Resource person's expenses	September	Resource person
	Technical itinerary for maize	Special topic	Resource person's expenses	October	Facilitator
Foot-and-mouth disease in cattle	Vaccination	Special topic	Vaccines	May–June	Facilitator
	Learning about the pathology of foot-and-mouth disease	Special topic	Disinfectant (methylene blue, absorbent cotton, scissors, gloves, bovine urine) Cost of treatment	June–September	Facilitator

Source: Authors' own elaboration.

***Note**: See Annex 11 for an example of a complete FFS curriculum for integrated management of the Fall Armyworm on maize.*

2.2.5 Setting up comparative experiments

Implementation of comparative experiments in FFS is crucial for assessing the effectiveness of various agricultural practices or technologies. Proper planning, experimental design, data collection and analysis are essential to ensure meaningful results.

Comparative experiments aim to compare different practices to achieve specific objectives such as increasing crop yield or improving

soil health. They provide participants with hands-on experience and empirical evidence to inform decision-making and the adoption of best practices. Before conducting experiments, facilitators identify clear research questions relevant to participants' needs and farming challenges.

Carefully designed experiments may consist of selecting appropriate treatments, determining plot locations, and controlling for factors influencing results. Treatments may vary from crop varieties to pest management strategies. Standardized data collection protocols ensure consistency, and participants actively engage in data collection. Although not required, a statistical analysis can help interpret results, identifying trends and relationships.

Facilitators lead discussions to interpret findings, encouraging participants to evaluate implications for their farming systems and apply lessons learned. Findings inform decision-making, the adoption of best practices and innovation in agriculture, thus promoting knowledge exchange and collaboration within the agricultural community.

Overall, comparative experiments in FFS provide valuable learning opportunities and contribute to sustainable agricultural development.

Comparative experimentation in FFS adhere to the following key principles in order to ensure effective participation, data collection and learning:

1. **Farmer-led experimentation**: This core principle prioritizes farmers as the central figures in the experimentation process. They identify areas for improvement, design the experiments, conduct the trials on their own farms, and analyse the results. Researchers and facilitators act as guides, providing support and expertise, but not dictating the process.
2. **Replication with variations**: Experiments are not conducted in isolation. Ideally, the same experiment is replicated by several farmers across different fields or locations within the community. This allows for the observation of variations in results due to factors like soil conditions, microclimates or individual farmer practices. By comparing these variations, farmers gain a broader understanding of the factors influencing the success of a particular intervention.
3. **Rigorous data collection methods**: While emphasizing farmer-led experimentation, the approach does not neglect data quality. Simple but effective methods are employed to collect data throughout the experiment. This may involve recording observations in notebooks, using standardized measurement tools, or creating visual aids such as scoring charts. The data collection methods are chosen collaboratively with farmers to ensure that they are user-friendly and provide valuable insights.
4. **Participatory analysis and interpretation**: After data collection, farmer groups come together to analyse and interpret the results. This collaborative process allows them to share observations, identify patterns, and draw conclusions about the effectiveness of the experiment. Researchers can facilitate the discussion by posing questions and prompting critical thinking, but ultimately, farmers take ownership of the analysis and derive their own learnings.
5. **Sharing and dissemination of knowledge**: The knowledge gained from comparative experiments should not be siloed. Farmers are encouraged to share their findings with others in the community, both formally through presentations or demonstrations, and informally through daily interactions. This knowledge sharing fosters collective learning and allows the community to adopt successful practices more widely.

6. **Action research approach**. Comparative experimentation aligns with the principles of action research. It's not simply about collecting data, but rather, about using it to inform action and improve agricultural practices within the community. The results of the experiments guide farmers in making informed decisions about their future farming activities.

By following these principles, comparative experimentation in FFS empowers farmers to become active researchers, fostering a culture of experimentation, innovation and continuous learning within the community (Tables 3 and 4).

Table 3. Key directives of comparative experimentation in Farmer Field Schools

Directive	Description	Postive examples	Negative examples
Farmer-led experimentation	Farmers identify problems and design experiments. Researchers provide support but do not dictate the process.	Farmers discuss issues regarding nutritional solutions for calves. They decide to experiment with creep feeding (providing extra feed to young claves), using different feeding methods.	The researcher arrives and proposes an experiment on a new medication for cattle. The farmer is told to follow the instructions and report back on the results. There is no discussion of their challenges related to calf rearing.
Replication with variations	Experiments are repeated in different locations with variations to account for local factors.	The creep feeding experiment is implemented in separate herds with different grazing pastures. This allows farmers to observe success across varying feed quality.	The experiment is only conducted on one herd, and the results are generalized to the wider population. This doesn't account for potential variation in feed availability, or environmental conditions.
Rigorous data collection methods	Simple, effective methods are used to collect data throughout the experiment.	Farmers involved in the experiment use a table to weigh and track weight gain of calves in each feeding group. This allows them to regularly review progress and note any health issues observed.	Farmers rely solely on memory to estimate calf weights and feeding behaviour. This can lead to inaccurate or incomplete data.

Table 3. (CONT)

Directive	Description	Positive examples	Negative examples
Participatory analysis and interpretation	Farmers collaboratively analyse data, draw conclusions, and own the learning process.	After collecting data, farmers gather to discuss observations on calf weight gain and overall health in both feeding groups. They compare results and collectively reach conclusions about the effectiveness of creep feeding. A researcher facilitates the discussion but avoids imposing his or her interpretation.	The researcher analyses the data alone and presents his or her findings to the farmers regarding creep feeding. This discourages farmer ownership of the learning process and may not address their specific questions or concerns about calf mortality.
Sharing and dissemination of knowledge	Farmers share their findings with the community to promote wider adoption of successful practices.	Farmers who participated in the experiment present their findings on creep feeding to the wider community during a village meeting. They share visuals like charts or drawings to explain the experiment design and its results on calf weight gain.	Farmers who participated in the experiment present their findings on creep feeding to the wider community during a village meeting. They share visuals like charts or drawings to explain the experiment design and its results on calf weight gain.
Action research approach	Experiment results inform future agricultural practices within the community.	Based on the experiment's results (e.g. improved calf weight gain with creep feeding), farmers decide to incorporate creep feeding into their standard calf rearing practices. This knowledge empowers them to potentially reduce calf mortality rates and improve herd health.	The experiment is seen as a one-time activity. Farmers do not use the lessons learned to inform their future animal husbandry practices. They continue with traditional feeding methods regardless of the experiment's outcome.

Source: FAO. 2016. *Farmer field school Guidance: Document planning for quality programmes*. Rome. https://openknowledge.fao.org/handle/20.500.14283/i5296e

Table 4. Tomato and straw mulching

Directive	Description	Positive examples	Negative examples
Farmer-led experimentation	Farmers identify problems and design experiments. Researchers provide support but do not dictate the process.	Farmers discuss tomato mulching and design experiment.	The researcher proposes an experiment and indicates methods. dictates methods.
Replication with variations	Experiments are repeated in different locations with variations to account for local factors.	Tomato mulching experiment on three farms with varying soil.	The experiment is conducted on one farm only; the results are generalized to the whole village.
Rigorous data collection methods	Simple, effective methods are used to collect data throughout the experiment.	Farmers record weekly observations on tomato growth using a data sheet.	Farmers rely solely on memory to recall observations.
Participatory analysis and interpretation	Farmers collaboratively analyse data, draw conclusions, and own the learning process.	Farmers discuss observations, analyze trends, and interpret experiment results.	The researcher analyses the data alone and presents the findings to the farmers.
Sharing and dissemination of knowledge	Farmers share their findings with the community to promote a wider adoption of successful practices.	Farmers present experiment findings to the village community using visuals.	Knowledge about the experiment remains with the participating farmers only.
Action research approach	Experiment results inform future agricultural practices within the community.	Farmers adopt straw mulching as standard practice based on experiment results.	The experiment is a one-time activity with no impact on future practices.

2.2.6 Alternative experimentation

The notion of alternative experimentation in FFS acknowledges that classic comparative experiments with control groups may not always be feasible due to ethical considerations or practical constraints. In such cases, three types of simple alternative experiments can be conducted, as described below.

1. **Examining current practices**: Farmers in Solomon Islands already employ various methods for crop cultivation. For instance, they might use different planting techniques or soil management practices. By observing and evaluating these methods, farmers can learn which practices work best in their specific context without the need for formal experiments. This approach is particularly useful for studying new or less-known practices, such as comparing the effectiveness of different organic fertilizers or evaluating the impact of mulching on soil moisture retention.

2. **Comparing with traditional methods**: FFS participants can compare their current farming practices with traditional or conventional methods used in the past. For example, they could compare modern rice cultivation techniques introduced through the FFS programme with traditional methods of rice farming practised by their ancestors. By examining the outcomes of both approaches, farmers can assess the advantages and disadvantages of adopting new agricultural practices.
3. **Experimenting with start and stop**: Another approach involves implementing and temporarily suspending a specific agricultural practice multiple times to observe its effects. For instance, farmers could experiment with different irrigation schedules for crops like taro or sweet potatoes. By alternating between watering and withholding water at different intervals, farmers can assess the impact of irrigation frequency on crop yield and water use efficiency.

These alternative experimentation methods allow FFS participants in Solomon Islands to explore innovative farming practices and adapt them to local conditions, contributing to sustainable agricultural development in the region.

2.2.7 Selection of the field or host herd

The selection of a suitable host field or herd is pivotal for the success of FFS in Solomon Islands, serving as the primary venue for training, demonstrations and hands-on learning experiences.

To conduct experiments, the group requires a host field for crops or a host herd for animals. The host field, provided voluntarily by a member of the group, is used for crop learning and comparative experimentation.

If volunteering is unavailable, the group may agree to rent a suitable plot. It's essential to ensure that the selection is made for learning purposes, not for the host farmer's benefit, in order to establish equitable partnerships and avoid conflicts.

Criteria for selection are the field's characteristics common to the region, suitability for the selected crop or problem to be studied, accessibility to all members, security against animals, and permission from the host farmer to be present during sessions.

By carefully considering these factors, the facilitator can create conducive learning environments, fostering meaningful participation and knowledge sharing among participants.

2.2.8 Drafting a rental agreement between the Farmer Field School and the host farmer

A rental agreement between the FFS and the host farmer must be drafted, which should include the following:

1. The host farmer is defined as the farmer who has provided the site(s) used for carrying out agricultural activities using the FFS methodology after consulting the members of their household.
2. The name of the host farmer, the name of the village and the name of the group.
3. The host farmer must allow group members free access to the FFS site under the agreed agreement during the FFS cycle.
4. Crops harvested during the season should be used according to the group's agreement.

CHAPTER 3

Operational phase of a Farmer Field School

3.1 The Farmer Field School training session

In order to participate in the FFS sessions, registered participants must collaborate with the facilitator to establish key programme parameters, including the commencement date, meeting frequency and duration of the learning sessions. These agreed on terms are crucial for validating attendance and successfully completing the programme, ultimately leading to the acquisition of the field school certificate.

3.1.1 How the training session proceeds

Prior to commencing the sessions, the facilitator is required to be punctual and serve as a role model, fostering a culture of punctuality among FFS participants/members. It is imperative for the host team and each subgroup to occupy the same designated seats throughout the sessions. This practice streamlines group dynamics and fosters cohesion among subgroup participants, enhancing the overall efficiency of the session.

Typically, the group convenes once a week for a session lasting approximately three and a half hours (Table 5). A typical session comprises the following five key activities, each representing a fundamental aspect of the FFS:

a. Analysis of the agroecosystem

b. Maintenance work on comparative experiments

c. Facilitation of special topics or themes of the day

d. Dynamic group exercises

e. Monitoring, evaluation and learning: The session is orchestrated by the host team, supported by the facilitator, who adhere to the agreed upon schedule established with the participants. This structured approach ensures the effective delivery of the curriculum and fosters active participation among participants, facilitating comprehensive learning experiences within the FFS setting.

The photo below shows a table with a clear and structured overview of the day's activities, their respective goals, and the assigned managers, ensuring efficient coordination and implementation of the Community Extension Programme of Solomon Islands.

Working group in the Farmer Field School facilitators' training, Guadalcanal

Table 5. Example of a day of activities for a Farmer Field School

Time	Activity	Goals	Managers
8.35 – 8.45	Roll-call	Monitor attendance and share information regarding reasons for absences, fostering accountability and communication within the group.	Host team
8.45 – 8.55	Reminder of previous session	Review previous activities to establish continuity and coherence with today's agenda, ensuring a seamless learning experience.	Facilitator
8.55 – 9.00	Presentation of the day's programme	Engage members fully in the day's activities by providing a clear overview of what to expect, enhancing participation and commitment.	Facilitator
9.00 – 9.30	Agro-ecosystem analysis (AESA) data collection	Collect data to assess and evaluate the progress of ongoing experiments, enabling informed decision-making for agricultural practices.	Subgroups
9.30 – 10.30	Analysis and restitution of AESA results	Analyse and present collected data to the larger group, facilitating collaborative decision-making for effective agricultural management actions.	Subgroups

Table 5. (CONT)

Time	Activity	Goals	Managers
10.30 – 10.40	Group dynamics	Revitalize the group dynamics and stimulate active participation through interactive exercises, fostering a supportive and engaging learning environment.	Subgroups
10.40 – 11.10	Special topics	Discuss and delve into specific topics relevant to local agricultural practices, promoting knowledge-sharing and skill enhancement among participants.	Facilitator
11.10 – 11.40	Experimental maintenance work	Implement urgent decisions from the AESA and carry out routine maintenance work on experiments, ensuring the continuity and reliability of research efforts.	Facilitator
11.40 – 11.50	Evaluation of the session	Assess how the day's programme has been conducted. Assess the level of satisfaction of the participants.	Facilitator
11.50 – 12.00	Closing the session	Share relevant announcements, conduct final attendance check, and conclude with a closing prayer, fostering a sense of community and gratitude.	Secretary and host team

Source: Authors' own elaboration.

The Programme is tailored to integrate local cultural elements and agricultural practices, effectively addressing the specific needs and context of Solomon Islands while fostering learning and collaboration within the Programme.

3.1.2 Agroecosystem analysis

AESA helps farmers understand and manage their farming environment for sustainable agriculture. It considers soil, water, plants and animals as interconnected parts of the ecosystem, considering how they all affect each other.

AESA involves assessing soil health, water resources, crop health and pest management to improve productivity while reducing harm to the environment. It also focuses on conserving biodiversity, adapting to climate change, and involving farmers in decision-making. AESA is an ongoing process that gives farmers valuable information to keep their ecosystem healthy and productive over time.

AESA is based on the idea of ecosystems, which are living things and their interactions with the environment. In ecosystems, various elements coexist, from living beings such as cows, ticks, mosquitoes, grass and trees, to non-living items such as pebbles, wooden posts and farm buildings. These elements interact within the physical environment, such as air, water, land and wind. Organisms in ecosystems are divided into different trophic levels, indicating their place in the food chain.

Farmers, just like crops and weeds, are at the top of the food chain, followed by herbivores, carnivores, omnivores and decomposers. Decomposers, such as bacteria and fungi, play a crucial role in breaking down dead plants and animals, recycling nutrients. AESA examines these interactions to help develop sustainable farming practices and manage ecosystems effectively.

Exploring AESA: understanding how everything works together on the farm

AESA is the cornerstone of the field school methodology. It is aimed at understanding how everything in a farming area works together; for example, crops and animals are interconnected with other living and non-living things such as pests, weeds, water, soil and weather. This is similar to looking at all the different parts of a puzzle to see how they fit together.

Through AESA, farmers keep a close eye on what's happening with their crops or animals, checking regularly to see how they're growing and if there are any problems. This helps farmers learn more about their farming area and make better decisions about how to take care of their crops or animals. It provides farmers with a special set of tools to be better farmers and make their farms healthier and more productive. In areas where people raise animals, AESA also looks at how the animals and the land they live on interact, helping farmers make decisions to improve how they manage both their animals and their land.

Define the parameters to measure and observe

AESA involves measuring or observing specific parameters to assess the health and performance of animals or plants in a farming environment (Table 6). Before heading to the farm or experimental field, members of the community extension programme convene to decide on the parameters to monitor.

For animals, the parameters may be weight, size, hair condition, body temperature, movement, rumination, presence of parasites, and other relevant indicators of health and behaviour. For plants, parameters may be height (in centimetres), total number of leaves, number of diseased leaves, leaf length and width, collar circumference, number of dead leaves, presence of insects and natural enemies, soil moisture levels, plant diseases and more.

These parameters provide farmers with valuable insights into the condition of their livestock or crops, enabling them to make informed decisions for effective farm management.

The Sample Data Sheet organizes the parameters to measure or observe for both animals and plants, facilitating systematic data collection and analysis within the AESA process.

How to choose ASEA stations in the field

Choosing AESA stations in the field involves strategic planning to ensure comprehensive coverage and representative sampling of the farming environment.

Random selection: Initially, choose samples randomly to ensure unbiased representation of the farming environment. For experimental fields, use ropes with knots to establish sampling routes, such as diagonal, cross, U-shaped, zigzag or S-shaped trajectories.

Sample identification: Identify plants or animals close to the knots on the ropes or those affected by fallen nodes as samples. Avoid selecting plants located on the periphery, because they may be more susceptible to grazing, insect damage, erosion or other disturbances.

Sample size: For plots not exceeding 50 acres (20.2 ha) or average-sized farms (0.5 to

Plot observation during the agro-ecosystem analysis, Guadalcanal

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Table 6. Sample data sheet: measuring parameters for both animals and plants in the conducting the agro-ecosystem analysis

Parameters to measure/ observations	Animals	Fishes	Plants
Weight	✓	✓	
Size	✓	✓	Height (cm)
Hair condition	✓		
Body temperature	✓		
Presence of parasites	✓		
Total number of leaves			✓
Number of diseased leaves			✓
Leaf length (cm)			✓
Collar circumference (cm)			✓
Number of dead leaves			✓
Presence of insects			✓
Presence of natural enemies			✓
Soil moisture			✓
Presence of plant diseases			✓

Source: Authors' own elaboration.

1.5 ha), select approximately five samples per plot. This sample size is sufficient to capture variations in farm conditions and provide meaningful observations during AESA.

Permanent targets: Once selected, these samples become permanent targets for observations during AESA. Regularly monitor and record data from these stations to track changes over time and assess farm health and productivity.

By following these steps, farmer participants can effectively choose stations to observe during AESA, ensuring comprehensive coverage and representative sampling of the farming

environment for informed decision-making and sustainable farm management.

How to conduct AESA in FFS

Conducting AESA involves four simple steps:

Step 1: Field observations: In subgroups, spend about 30 minutes observing different elements of the farm, such as cows, goats or pastures. Emphasize the importance of observing interactions between various factors in the soil-crop environment. Ask questions like "What is this?" to encourage learning through exploration.

Step 2: Analysis and recording: Each subgroup analyses the collected data and creates a structured AESA sheet, including summary data, pictures and drawings depicting the field situation, together with decisions and recommendations. This involves drawing the observed situation on the ground and providing straightforward recommendations, considering potential literacy limitations.

Step 3: Plenary presentation and discussion: Each subgroup presents their findings in a group session; others give feedback and ask questions.

Step 4: Plenary decision-making: Discuss the findings as a group and decide on actions to take. Summarize the presentations and plan the next steps for farm management.

Remember, AESA can help improve observation in various areas, not just agriculture or livestock.

An agro-ecosystem analysis in Guadalcanal

© Hayato Ogushi

Datasheet for ASEA in FFS

FFS Group: Problem addressed:

Village: Date:

ASESA No.: Time of observation:

Plot No.: Name of host farmer/enterprise:

Instructions: This datasheet is designed to help you document key observations about your agroecosystem during the FFS programme.

Fill out each section as you progress through the programme and during field visits.

Parameters	**Plots**					
	1	2	3	4	5	Total or average
Insect pests						
Natural enemies						
Plant development						
• Plant height (cm)						
• Total number of leaves						
• Number of diseased leaves						
• Leaf length (cm)						
• Leaf width (cm)						
• Crown circumference (cm)						
• Number of dead leaves						
• Number of flowers						
• Number of fruits						

3.1.3 Group dynamics exercises

Understanding group dynamics: psychological and social interactions in small groups

Group dynamics encompass the psychological and social behaviours, tools and interactions that arise within small groups. In field schools, group dynamics exercises serve several purposes:

- creating a relaxed and stimulating atmosphere;
- facilitating effective communication among participants;
- encouraging active engagement in learning activities;
- simplifying complex concepts for better understanding;
- strengthening group cohesion and teamwork; and
- resolving conflicts that may arise within the group.

Without incorporating group dynamics, there may be a lack of trust among participants, impeding the development of a supportive environment and leading to ineffective teamwork and communication. Thus, integrating group dynamics exercises into field school agendas is essential for enhancing the overall learning experience.

Creating group dynamics exercises: enhancing learning experiences

When incorporating group dynamics into field school activities, follow these steps:

1. Clearly define goals.
2. Time the exercises appropriately, such as energizing the group or resolving conflicts.
3. Plan inclusive activities with clear introductions and discussions.
4. Tailor exercises to fit local customs and culture.
5. Use a variety of activities to engage everyone.
6. Be flexible and adjust exercises to suit each group's unique characteristics.
7. Ensure that everyone participates.
8. Adapt exercises to match local customs.
9. Customize structured exercises to meet the specific needs of each field school.

Common group dynamics methods include applause, local songs, dances, poems, riddles, proverbs, turn-taking games, theatre and discussions.

3.1.4 Special topics or themes of the day

Exploring special topics

Special topics cover essential technical information needed before implementing activities, especially those involving risks like animal health issues. These topics have the following aims:

1. Build on existing knowledge.
2. Provide access to new information.
3. Offer theoretical insights from experts.
4. Enhance farmers' technical knowledge.
5. Ensure learning is demand-driven.
6. Upgrade participants' skills.
7. Connect farmers with service providers and networks.

These topics play a vital role in addressing farmers' specific needs and interests by providing practical insights and empowering them to improve their farming practices and livelihoods.

Identifying special topics

Special topics are discovered by learners, often with facilitator support, in various situations:

- during the field school setup, when the facilitator conducts surveys to uncover community issues;

- while designing and implementing comparative experiments;
- through observations made during ASEA sessions;
- during exchange visits to other farms; and
- following community emergencies like disease outbreaks or pest infestations.

Participants should identify all relevant themes in order to schedule them, and facilitators help determine the best timing for each theme. If expertise is lacking, external speakers (scientists, specialists, or other producers) can be invited to guide discussions. These stakeholders should be briefed on the field school approach and participatory methods beforehand.

Important aspects of facilitating special topics in FFS

1. **Use participatory methods**: Engage learners with methods such as group discussions, brainstorming, demonstrations and group dynamics, which are more effective for adult education.
   Example: Host group discussions where farmers share their traditional farming techniques and discuss how they can integrate modern methods for better crop yield.
2. **Start with relevant themes**: Choose themes for the day based on upcoming activities or tasks.
   Example: Focus on soil conservation and erosion control techniques before the start of the rainy season to help farmers prepare their fields and prevent soil loss.
3. **Be prepared**: Avoid visiting the group without preparation to prevent gaps in knowledge and maintain participants' interest in the session.
   Example: Before discussing pest management strategies, research common pests affecting crops in Solomon Islands and prepare solutions to address them effectively.
4. **Respect time**: Make the most of the time allocated for the theme of the day, even if materials are not fully prepared.
   Example: Allocate a portion of the session to address farmers' pressing questions about adapting to climate change and its impact on agriculture in Solomon Islands.
5. **Bring educational materials**: Always bring teaching materials to support the session because planned activities may not always proceed as intended. These materials also help address participants' deeper questions.
   Example: Bring visual aids such as posters or leaflets illustrating sustainable farming practices specific to Solomon Islands, such as intercropping or agroforestry techniques.
6. **Develop multi-sectoral themes**: Collaborate with different ministries to address various topics beyond agriculture and livestock, including social skills such as HIV/AIDS prevention, cooking and nutrition, based on the needs and interests of field school participants.
   Example: Collaborate with the local health authorities to incorporate sessions on nutrition and cooking using locally available ingredients to promote healthier lifestyles among farmers.
7. **Provide well-structured learning**: Offer clear explanations and lead structured learning sessions to ensure that participants feel empowered and motivated to learn. Plan and organize weekly sessions effectively.
   Example: Create a weekly agenda outlining specific topics to be covered, such as planting schedules, pest management and market access strategies, to ensure that sessions are organized and informative.

3.1.5 Monitoring, evaluation and learning

Using MEL to check that things are going well

MEL is a way for everyone involved in FFS to continuously check if they are making positive

changes and meeting their goals. It's like keeping an eye on things to see how well they're going and if any improvements are needed (Table 7).

Here is how it works

1. **Observing and analysing**: People in the FFS, i.e. facilitators, farmers and service providers, use special methods to watch and understand what's happening. They pay attention to how well things are going and if they're meeting their goals.
2. **Based on participation**: Since FFS involves everyone working together, MEL also involves everyone. It's not just one person's job; everyone gets to be a part of it.
3. **Why it's important**: MEL helps to, *inter alia*:
    - o keep track of how well the FFS is doing and make sure it's meeting its goals;
    - o find ways to fix any problems that arise;
    - o see if each FFS session is running according to plan;
    - o check on any experiments happening in the FFS;
    - o keep an eye on how cost-effective different farming methods are.

MEL serves as a watchful eye on the FFS to ensure that they are running efficiently and having a positive impact.

Example of planning and evaluation tools: drawings and maps

Objectives

Drawings and maps are simple tools that anyone can understand, including those who can't read or write. They help to track changes in an area over time. The main objectives of using these tools are:

1. Plan and assess training needs at the beginning of the learning cycle.
2. Keep track of progress during the FFS sessions.
3. Evaluate what has been achieved by the end of the FFS.

Table 7. MEL activities following the Farmer Field School cycle in Solomon Islands

Period	MEL activities	Who should do it?
Preliminary activities	Conduct group exercises using participatory evaluation tools to identify problems, constraints and opportunities	Facilitator with the community (village)
Before installation	Evaluate existing agricultural practices and perceptions, and factors influencing decisions	
	Identify producers' expectations	
	Plan field school learning activities	
When implementing FFS	Conduct an initial test (pre-test) of farmers' knowledge	Facilitator and members of the FFS
	Define parameters for monitoring experiments	
	Define the model and parameters of the Agroecosystem Analysis (AESA)	

Table 7. (CONT)

Period	MEL activities	Who should do it?
	Record basic information from the initial test (AESA)	
Weekly FFS events	Maintain records of activities performed (test conduct, AESA, special topics)	Facilitator and members of the FFS
	Monitor the budget (expenses and revenues)	
	Conduct a mid-term evaluation of the school field	
	Share and discuss the experience of the field school with other producers in the community during guided tours	
At the end of the FFS cycle	Make a final evaluation of the tests: performance analysis; cost-benefit analysis	Facilitator and members of the FFS
	Make a final evaluation of all Agroecosystem Analysis (AESA) data	
	Discuss options/practices to remember	
	Conduct a final test of the knowledge of producers who are members of the field school (post-test)	
	Evaluate the overall learning programme of the school field (level of achievement of results)	
After FFS training	Monitor farmers' adoption of new practices on their individual farms based on their statements during meetings	Facilitator and members of the FFS

Source: van den Berg, H., Phillips, S. & Morales-Abubakar, A.L.C. 2023. *Monitoring, evaluation and learning in farmer field school programmes – A framework and toolkit*. Rome, FAO. https://doi.org/10.4060/cc5160en

Materials needed

- Flipcharts
- Paper
- Markers in different colours
- Scissors
- Glue
- Local materials.

Procedure

1. The facilitator divides the participants into two groups.
2. One group draws a picture (a map) of the farming or animal care methods it currently uses; the other group draws what it thinks are the methods needed to solve important community problems.
3. Participants use paper, markers and local materials to illustrate these methods.

4. After completing the drawings, the groups analyse and compare them. This helps to understand which methods are currently used and what new methods are needed.
5. Halfway through the FFS, the exercise can be repeated to see if any new methods have been learned and used.
6. At the end of the field school or a few months later, another drawing or map can be made to see if there have been any changes.
7. By comparing the drawings or maps made at different times, we can see evidence of any new methods adopted and changes made over time.

Tool: The urn test

The urn test methodology proves effective for pre-testing and post-testing in field school settings, assessing participants' knowledge levels before and after sessions.

Pre-tests are conducted prior to sessions to gauge existing knowledge and tailor the programme to participants' needs.

Post-tests follow the sessions to measure progress, allowing facilitators to assess programme effectiveness in enhancing knowledge and skills.

Overall, the urn test facilitates a comprehensive evaluation of learning progress and programme adjustments as necessary in field school environments.

How to conduct the urn test (pre-test and post-test)

Objective

To measure changes in participants' knowledge levels and ensure easy participation for all, including illiterate individuals.

Materials needed

- Boxes with three compartments (one for each answer option)
- Sticks to support the boxes
- Sheets of paper for participants to write their answers
- Question-and-answer sheets
- Results sheets and adhesive tape.

Test duration

- Preparation: 4 hours
- Test session: 4 hours.

Procedure

1. **Preparation**: Formulate questions related to local field problems. Each question should have three answer options. Prepare the materials in advance.
2. **Question display**: Write each question and its answer options on a flipchart, next to live samples if possible.
3. **Participant allocation**: Give each participant a set of numbered sheets corresponding to the number of questions. For example, if there are 10 questions, Participant No. 1 gets 10 sheets numbered 1.
4. **Test taking**: Participants read the questions displayed on the boxes and choose an answer by placing their numbered sheet in the corresponding compartment. Illiterate participants can be assisted by literate peers without influencing their choice.
5. **Plenary discussion**: After the test, organize a group discussion. Ask participants about the answers they selected and the reasons. This helps gather quality data for programme development.
6. **Result calculation**: Calculate test results if possible, during the session; otherwise,

present results in the following session. Emphasize that low scores are not shameful; the goal is learning and improvement.

By following these steps, you can effectively conduct the pre-test and post-test using the urn test method in a field school setting, enabling you to assess participants' knowledge levels and tailor the learning programme accordingly.

Satisfaction level assessment tool 1: *The Assessment Wheel*

The Assessment Wheel is a simple tool used to measure how happy the group feels about the activities of the day in the FFS.

Here's how it works:

Objective

The Assessment Wheel helps measure how satisfied the FFS group is with different aspects of the day's activities.

Materials needed

- A flipchart with a drawing of a wheel with empty sections
- Different coloured markers.

Duration

It takes about 30 minutes to set up the wheel and 15 minutes to use it.

Procedure

1. **Preparation**: The facilitator or host group draws the Assessment Wheel on a flipchart.
2. **Indicator selection**: Each section of the wheel represents something important to evaluate in the FFS sessions, such as the level of people's participation, how much they liked the session content, or how well the facilitator performed.

Urn test (pre-test and post-test), Guadalcanal

© Hayato Ogushi

3. **Rating**: The FFS participants decide on which section of the wheel to mark in order to show how they feel about each indicator. Closer to the centre, they feel good about it; but closer to the edge, they are not so happy. They can also use a ranking of 1 to 5.
4. **Discussion**: After the ranking, the group discusses the reasons for their rating of each indicator. If there are any low ratings, ideas are discussed together in order to improve the situation.
5. **Repeat**: This assessment is carried out at the end of each session, so the group can keep track of how they're feeling about the FFS over time.
6. **Comparison**: The assessment wheels from different sessions can be compared from week to week to see how the FFS is progressing.

The Assessment Wheel helps the group see what they liked and did not like about the day's activities and figure out ways to make things even better next time.

Satisfaction level assessment tool 2: *'Is the Glass of Milk Full?'*

The 'Is the Glass of Milk Full?' exercise is a straightforward tool used to measure how happy the field school group is at the end of the day's activities.

Here's how it works:

Objective

To help gauge the overall satisfaction level of the field school group after a day's activities.

Materials needed

- A box or bag
- Paper
- flipchart
- Markers of different colours.

Duration

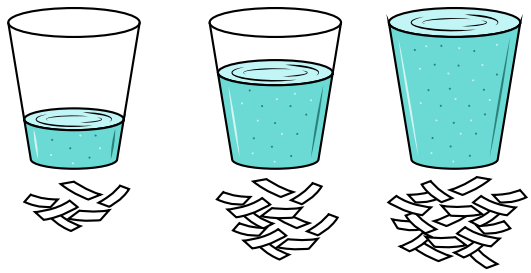
It takes about ten minutes to complete.

Procedure

1. **Preparation**: Before the session, the host group creates three paper glasses of milk: one almost empty, one half full, and one full. These glasses represent different levels of satisfaction: almost empty refers to low satisfaction; half full refers to partial satisfaction, and full refers to high satisfaction.
2. **Participant setup**: Each participant gets a small piece of white paper.
3. **Rating**: At the end of the field school session, participants decide which paper glass represents their feelings about the day's activities.
4. **Voting**: Participants place their piece of paper in a box or bag near the chosen paper glass. To ensure unbiased choices, confidentiality is important, so participants don't feel pressured to make a socially accepted choice instead of their true feelings.
5. **Tallying**: The reception team opens each box and counts the 'votes' for each paper glass.
6. **Discussion**: The reception team then discusses the results, asking questions like "Why did people choose this result?" and "What made people feel this way?". Analysing the results helps understand participants' feelings and identify areas for improvement to address any dissatisfaction.

The 'Is the Glass of Milk Full' exercise helps the FFS group express how satisfied they are with the day's activities. It's a quick and easy way to understand everyone's feelings and figure out how to make things better if needed.

Figure 3. The 'Is the Glass of Milk Full?' exercise



Source: Authors' own elaboration.

Full glass of milk = very satisfied
Glass half full = not completely satisfied
Glass almost empty = not satisfied

Satisfaction level assessment tool 3: *The Mood Barometer*

The Mood Barometer helps the FFS group express how they feel about the day's activities. It's a quick and easy way to understand everyone's mood and figure out how to make things better if needed.

Objective

To measure how happy the FFS group feels overall at the end of the day's activities (Table 8).

Materials needed

- A flipchart
- Markers.

Duration

It takes about ten minutes to complete.

Procedure

- **Preparation**: The facilitator or host group creates a table with four columns on a flipchart. The first column lists the parameters to be evaluated, while the other three columns show different mood levels: angry, neutral and happy.
- **Rating**: At the end of the FFS session, each participant uses a marker to indicate their mood for each evaluation parameter by checking the appropriate column. It is important to maintain confidentiality to ensure that participants feel free to express their true feelings without influence.
- **Summary**: After all participants have indicated their moods, the reception team summarizes the results for each parameter and overall group mood.
- **Discussion**: The host group then discusses the results, asking questions like, "Why

Table 8. The Mood Barometer

			
Training Content	x	xxxx	xxxxxxxxx
Learning Method used by the Facilitator		xxxxxxx	xxxxxxxxxx
Group Dynamics	xxx	x	xxxxxxxxxx
The Conduct of the AESA	xxxx	xxxxxxxx	xxxx
Others			

Source: Authors' own elaboration.

did people feel this way?" and "What influenced their choices?" This analysis helps understand peoples' feelings and identify areas for improvement to address any dissatisfaction.

3.2 Organization of guided tours or opens days, and exchange visits

3.2.1 Organization of guided tours, or open days

A guided tour, or an open day, is an event where participants of a FFS showcase and share the results of their experiments and experiences gained through their activities. The main goal is to inform neighbouring farmers about new ideas and technologies demonstrated in their fields or herds, and to raise awareness among the community, government and other organizations about the benefits of the FFS approach. It also boosts the group members' confidence by showcasing their efforts to others and strengthens the bond between group members.

Procedure

1. **Preparation**: Before planning the event, the group discusses what they've learned and what they want to show to the community.
2. **Proposal submission**: The group prepares a proposal for the guided tour and sends it to the facilitator for evaluation and approval.
3. **Approval and programme preparation**: Once approved, the facilitator arranges the programme details (date, time, location) and informs the participants.
4. **Preparation**: This involves creating posters and presentations, setting up the venue, and rehearsing before the event.
5. **Execution**: The guided tour carefully follows the planned programme.
6. **Evaluation**: It is helpful to discuss the tour experience on the same day to share impressions and analyse results for future improvement. If not possible, it can be discussed in the next session.

Key considerations

- The guided tour should be scheduled when experiment results are ready for demonstration.
- It is an essential part of FFS activities, showcasing what the group has learned.
- It is the participants who plan and implement the tour with facilitator assistance, not an organizing office.
- Invitations can be extended to other local producers, government representatives, NGOs and the media.
- The tour should proceed as planned by the participants, closely following the programme.

A guided tour is a day where field school participants showcase their achievements and share knowledge with others, aiming to benefit the community and promote their approach to farming or herding.

3.2.2 Organization of exchange visits

Overview

Exchange visits are educational trips to other FFS, agricultural institutions or innovative producers. They serve a learning purpose, allowing FFS participants to compare activities, exchange tested technologies, and share innovations.

Procedure

1. **Define objectives**: The facilitator clarifies the learning objectives for the exchange visit. It could be part of an experiment or aimed at exploring a specific topic. Objectives may include comparing practices or sharing experiences with another FFS.
2. **Preparatory outing**: The facilitator, together with some participants, conducts

a preparatory visit. They take into consideration whether participants can travel to the visit location. During this visit, the facilitator and some participants:

- contact the hosts of the site or experience;
- share the objectives of the visit;
- identify key points to observe or discuss; and
- confirm the visit day and times, and discuss the programme.

3. **Carrying out of the visit**: Following the pre-established programme, the facilitator:
   - clearly presents the visit objectives to participants;
   - provides instructions and ensures that participants follow the programme during the visit.
4. **Evaluation**: Ideally, discussions about the visit are held on the same day. Participants share impressions and analyse results for future improvement. If this is not possible, discussions can be held at the next session.

Exchange visits to FFS are aimed at learning and sharing experiences. The facilitator plans the visit, defines objectives, prepares participants, and ensures that the visit goes smoothly. Subsequently, he or she evaluates the FFS to draw lessons learned.

3.3 Organization of final evaluations of the Farmer Field School

At the end of the FFS sessions, final evaluations are carried out to see if the group had achieved its goals. The information gathered during problem analysis is important for this evaluation.

The final evaluations consist of:

- **An analysis of FFS results**: This is an observation of what occurred during the FFS experiments and how the farmers' skills and knowledge have improved.
- **A post-test**: This test checks how farmers' own farming methods changed as a result of what they learned.

The final evaluations look at what the group achieved and how their farming practices improved as a result of the FFS.

3.3.1 Evaluation of experiments in the Farmer Field School

Evaluation in FFS serves a crucial purpose: to assess the effectiveness, impact and sustainability of the programme. Through evaluation, facilitators gain insights into what aspects of the FFS are functioning well and where improvements are needed. Additionally, evaluation offers stakeholders concrete evidence of the value and benefits of the FFS approach.

Evaluating experiments entails examining how different methods or options are performed in addressing a problem. This process empowers farmers to learn and discern which new techniques suit them best. In FFS, participants are responsible for collecting data from experiments, meticulously recording them, and should understand the results.

Procedure

1. **Preparing for evaluation**: Prior to evaluation, participants need to identify comparison parameters (indicators) right from the start of setting up the experiment. Throughout the experiment, they collect data on these parameters during FFS sessions.
2. **Preparing the results analysis matrix**: The facilitator asks the host team to set up a presentation board with papers showing the data and create a matrix to analyse the results. Each experiment is analysed separately, and the matrix should have columns for different parameters and experimental plots. It's important to keep criteria clear and avoid repeating them.

3. **Actual assessment**: Use symbols or drawings in the matrix cells to make it easy to understand, especially for illiterate participants. After filling out the matrix, participants discuss the pros and cons of each experimental plot based on the criteria. Then, they decide which option seems best for their field, and discuss the reasons for their choice.
4. **Conclusion**: Based on discussions, participants choose the solution that fits their field best. They may consider multiple options depending on conditions. It's important to remind them how these comparative experiences and monitoring through FFS have contributed to their decision-making.

Evaluating experiments in FFS entails checking different methods to solve problems. Participants collect data, analyse results, and decide which method works best for them.

3.3.2 Assessment of participants' knowledge

Understanding knowledge assessment

One of the keys aims of the FFS is to enhance the knowledge and skills of producers, transforming them into technical experts in their respective production systems. Throughout the learning journey, it is essential to gauge the progress made in the field school training. This involves assessing the change in participants' knowledge levels.

Procedure

The urn test serves as the primary tool for measuring learning progress. At the outset and conclusion of FFS sessions, participants undergo a test to evaluate their understanding of the FFS learning topic, such as crop production.

3.3.3 Assessment of the early adoption and spread

Understanding early adoption and spread

The most significant change occurs on the farmers' farms, not just within the FFS. Additionally, the FFS benefits not only its participants, but also the entire community they represent. For the community to truly benefit, the solutions learned in the FFS must be adopted and shared.

Procedure

This evaluation is typically conducted through a survey by the promoter (the organization or project initiating the FFS), the facilitator or an independent evaluator. The evaluation focuses on identifying early signs of adoption and spread, which can vary depending on the project's focus.

Generally, the evaluation looks for evidence of:

- local farmers adopting new agricultural techniques learned in the field school;
- changes in crop yields or livestock productivity;
- improvements in farmers' income;
- alterations in sociocultural practices and social status;
- changes in the availability or quality and quantity of locally produced food; and
- evidence of local farmers sharing the knowledge gained from the FFS with others in their community.

3.3.4 The Community Action Plan

Understanding the Community Action Plan

The Community Action Plan (CAP) is a strategic roadmap developed by the field school group with the guidance of the facilitator. It serves as a blueprint for continued action beyond the completion of a learning cycle. Rather than being a static document, the CAP is a

dynamic tool that reflects the evolving needs, challenges and aspirations of the community. It is crafted based on the insights gained from the evaluation of the field school's activities, including what has been learned and what areas still require attention.

In essence, the CAP outlines concrete steps and initiatives that the community intends to undertake to address identified issues, capitalize on opportunities, and achieve collective goals. Importantly, it recognizes that certain changes or innovations may require actions that extend beyond the confines of the field school group. Therefore, the CAP incorporates community-wide initiatives that are essential for the successful adoption and dissemination of new technologies or practices.

Procedure

The facilitator plays a crucial role in supporting the field school participants throughout the development of the CAP . He or she provides guidance and structure, helping the group navigate the process effectively. The development of the CAP begins with a thorough assessment of the field school's achievements, challenges and areas for improvement.

Using a structured framework, the facilitator facilitates discussions within the group to identify priorities, set goals, and determine actionable steps. The CAP is designed to leverage the unique strengths and capacities of the field school group and their community, fostering a sense of ownership and empowerment among its participants.

Once the CAP is drafted, it is presented to the wider community for review and feedback. This ensures that community stakeholders have the opportunity to contribute their perspectives, insights and concerns. After incorporating any necessary revisions, the CAP is finalized and formally adopted by the community, signalling a collective commitment to its implementation.

Overall, the CAP serves as a powerful tool for catalysing positive change, fostering community engagement, and driving sustainable development in the field school's locality.

CHAPTER 4

Post-training phase of Farmer Field Schools

4.1 Organization of the closing ceremony

Understanding the closing ceremony

The closing ceremony marks the culmination of the FFS cycle, serving as a significant event to acknowledge and celebrate the achievements of the participants. It provides an opportunity to express gratitude to the participants for their dedication and commitment throughout the training period. Additionally, the ceremony is a platform to recognize the knowledge and techniques acquired by the participants on specific subjects during the FFS sessions.

Key components of the closing ceremony

1. **Expression of appreciation**: The closing ceremony is an occasion to express gratitude to the participants for their active participation and contribution to the FFS. It acknowledges their efforts and commitment to learning and implementing new agricultural practices.
2. **Awarding of certificates**: Certificates of participation are awarded to the participants during the closing ceremony, which serve as formal recognition of their engagement in the field school activities. The criteria for obtaining the certificate are typically defined at the beginning of the FFS with the primary requirement being a minimum participation rate, often set at 80 percent of the weekly sessions.
3. **Graduation ceremony**: The closing ceremony also serves as a graduation ceremony for the participants. It symbolizes the successful completion of the FFS cycle and the transition to applying the knowledge and skills gained in their agricultural practices.
4. **Sharing lessons learned**: The graduation ceremony provides a platform to share the lessons learned during the FFS with the wider community. Participants may showcase their achievements, demonstrate the techniques they have mastered, and highlight the benefits of adopting new agricultural practices.
5. **Promoting FFS**: Another important objective of the closing ceremony is to generate interest in FFS within the community and neighbouring areas. By showcasing the successes and outcomes of the FFS, the ceremony aims to attract new participants and encourage community members to engage in similar learning initiatives.

Guests at the closing ceremony

It is highly recommended to extend invitations to various stakeholders and partners who have been involved in the FFS process from its inception. These guests play a crucial role in supporting and promoting the success of the FFS programme. Typically, the guests at the closing ceremony consist of the following:

1. **Professional farmer organizations**: These organizations include groups, associations and unions representing farmers and agricultural practitioners in Solomon Islands. These organizations play a vital role in advocating for the interests of farmers and facilitating access to resources and support services.
2. **Municipal or provincial administrative authorities**: Inviting representatives from municipal or provincial administrative bodies such as governors, administrators, municipal councillors and members of hill development committees helps to ensure governmental support and recognition for the field school initiative. Their presence emphasizes the importance of agricultural development in the region.

3. **Customary and religious authorities**: Traditional leaders such as village chiefs, community elders, imams, priests, pastors and other influential figures hold significant sway within the community. Their presence at the closing ceremony reinforces the cultural significance of the FFS programme, and underscores the importance of sustainable agricultural practices in line with local customs and traditions.
4. **Technical support structures**: Representatives from public or private technical support structures specializing in agriculture, livestock, environment and related fields should be invited. These organizations provide valuable expertise, resources and technical assistance to farmers, contributing to the success and sustainability of agricultural initiatives.
5. **Research and development partners**: Partnerships with research institutions, development projects, NGOs and other relevant stakeholders are essential for advancing agricultural innovation and knowledge dissemination. Inviting representatives from these organizations fosters collaboration and knowledge-sharing opportunities, facilitating the sharing of best practices and lessons learned.

By inviting a diverse range of stakeholders to the closing ceremony, the field school programme in Solomon Islands can garner broader support, raise awareness about its achievements, and strengthen partnerships for future agricultural development initiatives.

Procedure

1. **Preparing for the closing ceremony**:
    - The closing ceremony is typically organized collaboratively by the participants of the field school, the facilitator, and possibly the promoter.
    - The facilitator takes the lead in coordinating the preparation efforts. They work closely with the organizing committee to plan and execute the ceremony effectively.
    - A list of recipients for certificates is prepared by the facilitator based on the evaluation of participation, which is sent to the promoter to prepare the certificates.
    - Careful attention is paid to the accuracy of beneficiaries' names when filling out the certificates to ensure that they are spelled correctly.
    - The facilitator also gathers and prepares the results of various evaluations conducted throughout the field school cycle, including the final evaluation of experiments.
    - In addition to certificates, the facilitator assists the group in preparing presentations to showcase the results of their FFS learning, which can take various forms, such as posters, diagrams, practical demonstrations and field demonstrations.
    - Other materials relevant to the FFS activities, such as the field plan, experimental setups, examples of presentation formats used during the FFS, results analysis matrices, self-assessment results and future plans like the CAP are also prepared and presented during the ceremony.
    - Group dynamics activities are planned and incorporated into the ceremony to engage attendees. These activities can include dances, poems, stories, dramas, role plays – their content should highlight the key learnings and findings from the FFS, with important messages integrated into popular media formats.

2. **Execution of the closing ceremony**:
    - The closing ceremony unfolds according to the planned agenda, with careful attention to timing and flow.
    - Speeches, presentations and award ceremonies are conducted, with participants receiving their certificates of participation.
    - Selected individuals may be invited to share their experiences and insights gained from the field school, providing inspiration and motivation to fellow participants and attendees.
    - The presentations and materials prepared by the group are showcased, allowing attendees to gain insights into the achievements and outcomes of the field school activities.
    - Group dynamics activities are performed, adding vibrancy and cultural richness to the ceremony while reinforcing key messages and learnings from the field school.
3. **Reflection and evaluation**:
    - After the ceremony concludes, participants and facilitators engage in reflection and evaluation exercises to assess the achievements and outcomes of the FFS cycle.
    - Feedback from attendees is gathered to evaluate the effectiveness of the programme and identify areas for improvement in future cycles.
    - This reflective process helps inform future planning and decision-making, ensuring that subsequent FFS cycles are tailored to better meet the needs and expectations of participants and the community.

Overall, the closing ceremony is a significant milestone in the FFS journey, symbolizing the culmination of learning and the beginning of applying new knowledge and techniques in

Farmer Field School facilitators' training closing ceremony, Guadalcanal

agricultural practices. It serves as a moment of celebration, reflection and inspiration for participants and the wider community alike.

4.2 Follow-up of Farmer Field School participants after training: moving forward session

1. **Commencement of a new learning cycle**: After the culmination of a learning cycle and the closing ceremony, the field school embarks on a new phase of its journey. Guided by the Post-Activity Calendar, the group, with facilitator support, organizes itself to initiate a fresh learning cycle. This may involve establishing new field schools within the community or neighbouring areas. To sustain field school activities beyond initial subsidies, farmer groups are encouraged to explore income-generating ventures in order to empower themselves economically.
2. **Establishment of FFS networks**: In regions where there are multiple field schools, fostering field school networks is highly beneficial. These networks serve as sustainable mechanisms to bolster economic endeavours and foster the growth of both existing and new field schools. They facilitate commercial initiatives across affiliated field schools, streamline fundraising efforts, and coordinate sales activities. Within community extension programme groups, members convene, as per established regulations, to strategize on income-generating activities aimed at revitalizing and sustaining community extension programme accomplishments.
3. **Identification of facilitating farmers**: A critical aspect of post-training follow-up involves identifying and nurturing a select group of trained farmers keen on assuming the role of facilitators. These individuals should demonstrate a willingness to acquire new skills during subsequent training sessions. Initially, selected farmers work closely with the facilitator, gaining essential knowledge and experience. As they progress, these farmers may assume responsibility for leading their own FFS. The facilitator provides technical support to novice producer facilitators, overseeing their field school activities. Experienced facilitators may supervise multiple trained farmers, offering guidance in effectively implementing the FFS methodology.

4.3 Structuring Farmer Field School networks into cooperatives

Background

For the long-term sustainability of actions undertaken by FFS and the income-generating activities they promote, it is advisable to support these groups in organizing themselves into cooperatives. Depending on their level of activity and the significance of their economic endeavours, one or more FFS groups may choose to unite and establish cooperatives.

The seven principles of cooperatives

1. **Voluntary membership, open to all**: Cooperatives are inclusive organizations that operate on a voluntary basis and welcome all individuals capable of utilizing their services. Membership is open to everyone, regardless of gender, social status, race, political affiliation or religion.
2. **Democratic member control**: Cooperatives are democratic entities governed by their members, who actively participate in setting policies and making decisions. Elected representatives are accountable to the members. Each member typically has an equal voting right under the 'one member, one vote' principle.
3. **Economic participation of members**: Members contribute to the capital of the cooperative and have control over it. While members may receive limited returns on

their capital, any surplus generated is allocated towards various objectives such as cooperative development, reserves, member rebates and approved activities.

4. **Autonomy and independence**: Cooperatives are autonomous organizations managed by their members. They maintain independence by entering into agreements or seeking funds from external sources under conditions that uphold democratic member control and organizational autonomy.
5. **Education, training, and information**: Cooperatives provide education and training to their members, elected officials, managers and employees to enhance their contribution to cooperative development. They also inform the general public, including youth and opinion leaders, about the nature and benefits of cooperation.
6. **Cooperation among cooperatives**: Cooperatives collaborate with one another within local, national, regional and international structures to enhance service delivery to their members, and strengthen the cooperative movement as a whole.
7. **Commitment to community**: Cooperatives contribute to the sustainable development of their community within the framework of guidelines approved by their members. By adhering to these cooperative principles, FFS networks can establish cooperatives that foster economic empowerment, promote social responsibility, and contribute to community development.

Key factors for successful cooperative formation

The necessary conditions for creating a cooperative are crucial for ensuring its success and sustainability. Here are the key factors to consider:

1. **Identification of common problems**: The formation of a cooperative arises when individuals realize that certain challenges or limitations cannot be effectively addressed on an individual basis. This recognition prompts motivated individuals to come together as a group to find collective solutions.
2. **Balancing benefits and obligations**: Potential members assess the advantages of joining the cooperative (e.g. access to resources, services, markets and support) against the obligations they need to fulfil, such as financial contributions, time investment, or sharing of resources. The benefits should outweigh the obligations to incentivize membership and ensure commitment.
3. **Leadership and initiative**: Effective leadership is essential for the success of a cooperative. At least one individual within the group should possess leadership qualities and take the initiative to represent the collective interests. This leader should be trustworthy and reliable, and possess charisma to inspire and guide the cooperative towards its goals.
4. **Legal and political environment**: The formation of a cooperative requires a conducive legal and political environment that supports freedom in business organization, marketing, profit-making and distribution channels. A lack of legal or political restrictions enables the cooperative to operate effectively and sustainably within established frameworks.

By fulfilling these necessary conditions, individuals can establish cooperatives that effectively address common challenges, leverage collective resources, and contribute to the socio-economic development of their communities.

Vital conditions for sustainable cooperative development

1. **Visible and tangible benefits**: For a cooperative to thrive sustainably, it must

offer clear economic and social advantages to its members. This entails functioning as an effective economic entity in a competitive market, ensuring that members receive tangible benefits from their participation. These benefits could include access to goods, services, financial gains and social support, which contribute to the members' well-being and reinforce their commitment to the cooperative.

2. **Skilled and dynamic management**: Successful cooperatives require competent and motivated leaders who can strategically plan and implement economic and commercial policies. These managers should possess the expertise to address members' needs while also pursuing the cooperative's commercial objectives. Effective management ensures that the cooperative remains responsive to changing market dynamics and maximizes opportunities for growth and sustainability.
3. **Reflective organization and management**: The structure and management of a cooperative should align with the capabilities and aspirations of its members. If members lack skills or motivation, overly complex organizational structures may hinder rather than facilitate success. Therefore, the cooperative's framework should be tailored to empower members, encouraging their active participation in decision-making and ensuring that they have a stake in the cooperative's outcomes.
4. **Member participation as users and owners**: Central to the cooperative model is the concept of members as both users and owners. Members contribute resources, such as capital, labour and products, and actively engage in decision-making at various levels, from the General Assembly to specialized committees. In return, they benefit from the cooperative's profits, receiving dividends, interest rebates or access to shared infrastructure and services. Strong member participation fosters a sense of ownership and accountability, which is crucial for the cooperative's sustainability.
5. **Flexibility and adaptability**: Given the dynamic nature of markets and communities, cooperatives must remain flexible and adaptable to changing circumstances. This entails being responsive to shifting member needs, market trends, regulatory requirements, and external challenges. Flexibility enables cooperatives to seize opportunities, mitigate risks, and evolve over time, ensuring their continued relevance and viability in the long term.

4.4 Development of income-generating activities

4.4.1 Identification and selection of income-generating activities by Farmer Field School participants in Solomon Islands

In order to identify and select income-generating activities in Solomon Islands, farmers should list potential agricultural or pastoral enterprises they wish to pursue commercially. These activities are then prioritized based on several criteria such as profitability, market availability, capital requirements, risks, growing period and skills needed for successful implementation.

Procedure

1. **Listing preferred business activities**: Farmers are encouraged to brainstorm and list agricultural or pastoral activities they are interested in pursuing as income-generating ventures; for example, this could include producing potato seeds, cultivating rice, beekeeping, manufacturing licking blocks, and more.
2. **Creating a selection matrix**: A matrix is drawn up to evaluate each business activity based on predefined parameters or

factors. These parameters typically include profitability, market availability, capital investment, risk factors, growing period and required skills. The matrix is structured with activities listed in rows and parameters in columns.

3. **Assigning scores or coefficients**: Farmers assign scores or coefficients to each parameter based on its importance to their decision-making process. For example, profitability may be assigned a score of 10, while market availability may receive a score of 9, and so on. This step helps prioritize factors according to their significance.
4. **Completing the matrix**: Farmers then allocate a certain number of stones or assign numerical values to each business activity based on how each parameter affects it. This process involves multiplying the score or coefficient assigned to each parameter by the predefined number of stones or coefficients. The total score for each activity is calculated, which helps rank them based on their overall performance across all parameters.
5. **Analysis and selection**: After completing the matrix, farmers analyse the scores and rankings to identify the most promising income-generating activities. The activities with the highest total scores are typically considered the most viable options. However, a thorough analysis of the profitability of the selected activities using tools like gross margin analysis is also recommended to ensure their technical viability and profitability.

By following this structured procedure, FFS participants in Solomon Islands can effectively identify and select income-generating activities that align with their goals, resources and capabilities, contributing to sustainable livelihoods and economic development in their communities.

4.4.2 Gross margin analysis

What do we mean by 'gross margin'?

'Gross margin' is a financial metric that represents the difference between revenue generated from sales and the direct costs associated with producing or acquiring the goods or services sold. It is the profit a company makes from its core business activities before accounting for other expenses such as overhead costs, taxes and interest. Suppose that a local agricultural cooperative in Solomon Islands sells fresh produce to local markets. Here is how we can break down the concept of gross margin:

- **Revenue**: Revenue refers to the total income generated by a company from selling its products or services; for example, let's assume that the cooperative SBD 50 000 in revenue from selling fruits and vegetables over a certain period.
- **Cost of goods sold**: Cost of goods sold represents the direct costs incurred by the cooperative to grow and harvest the produce, including expenses for seeds, fertilizers, labour and packaging – let's assume that the total cost of goods sold amounts to SBD 30 000.

Calculating the gross margin?

Gross margin is calculated by subtracting the cost of goods sold from total revenue. The formula for gross margin is as follows:

- Gross margin = revenue - cost of goods sold
  Gross margin = SBD 50 000 - SBD 30 000.

In this example, the cooperative's gross margin would be SBD 20 000.

Explanation

A gross margin of SBD 20 000 indicates that after covering the direct costs of producing the fruits and vegetables (cost of goods sold), the cooperative retains SBD 20 000 as profit from its core operations.

- A higher gross margin suggests that the cooperative is effectively managing its production costs and generating more profit from each sale.
- Conversely, if the gross margin were lower, it might indicate higher production costs relative to revenue, which could affect the profitability of the cooperative's operations.

Why gross margin is important

Gross margin is a critical financial metric for businesses because it helps assess the efficiency and profitability of its agricultural activities. It provides insights into the efficiency of production processes, pricing strategies and cost management practices. By analysing gross margin over time, the cooperative can identify trends, evaluate the impact of changes in production methods or pricing strategies, and make informed decisions to improve profitability.

In summary, gross margin in Solomon Islands dollars provides valuable insights into the financial performance of the cooperative's core agricultural operations, helping it make strategic decisions to enhance profitability and sustainability.

4.4.3 Business planning

What is a business plan?

A business plan is a comprehensive document that outlines the goals, strategies and operational details of a business. It serves as a roadmap for entrepreneurs and business owners, guiding them in starting, managing and growing their ventures.

Key components of a business plan include an executive summary, a business description, a market analysis, a marketing and sales strategy, a product or service description, operations and management details, financial projections, risk management strategies, implementation timeline and supporting appendices.

By providing a structured framework for clarifying the business vision, developing actionable strategies, securing financing, and navigating challenges, a well-written business plan helps entrepreneurs effectively communicate their ideas, attract investors, and achieve long-term success.

Why a business plan?

A business plan is a dynamic tool that enables entrepreneurs to articulate their business vision, identify market opportunities, and develop strategies for success. It provides a roadmap for achieving goals, outlines operational processes, forecasts financial performance, and mitigates risks.

By incorporating key components such as market analysis, marketing strategy, financial projections and implementation timelines, a business plan serves as a comprehensive guide for entrepreneurs to effectively launch, manage and grow their ventures.

Steps for developing a business plan

1. **Agree on the size of the business**: This step begins with an assessment of market size, the potential customer base, start-up costs and management capacity. Preliminary investigations help answer questions about demand levels, resource availability, competition and expansion potential. It's advisable to start small and scale up later.
2. **Calculation of the budget for start-up and operation**: A typical budget includes fixed costs (e.g. inputs and equipment), variable/operational costs, financial plans, expected income and projected financial flow. Budget calculations help in estimating the total costs and expected revenue, ensuring financial viability.
3. **Assignment of roles and responsibilities**: The FFS group assesses participants' skills and assigns roles for various activities.

Coordinators are identified for input supplies, production, processing, advisory services, accounting, marketing and general management. Each participant's role is crucial, and rotations ensure broader skill development and continuity in operations.

4. **Agree on standards and regulations**: Establishing rules and regulations is essential to guide FFS affairs. These regulations cover aspects such as member contributions, rights of departing members, time commitment, profit sharing, reinvestment of profits and conflict resolution. Developing regulations in a participatory manner ensures collective ownership and compliance.

CHAPTER 5

Field exercises in Farmer Field School

5.1 Soil management-based exercises

Field exercise 1: *Exploring living soils*

Introduction

Have you ever noticed how some farms seem to consistently produce healthy, high-yielding crops? The secret might lie beneath their feet – in living soil! Unlike dirt that you just push around, living soil is a vibrant ecosystem teeming with life. Imagine a tiny underground city bustling with activity! This hidden world of beneficial creatures, from microscopic decomposers to hard-working earthworms, plays a crucial role in your crops' success. Today, we will explore what makes living soil so special and how you, as farmers, can cultivate this natural bounty for a thriving harvest.

Objectives

- Allow farmers to identify the signs of living soil.
- Allow farmers to appreciate the importance of soil biota for plant growth.
- Allow farmers to explain how their practices can influence soil life.

Materials

- Shovels or spades
- Magnifying glasses (optional)
- Large white sheets or trays
- Ziplock bags (optional)
- Handouts with pictures of soil biota (earthworms, mites, nematodes) (optional).

Procedure

1. **Introduction** (15 minutes):
    - Briefly discuss the concept of soil health and living soil.
    - Explain that healthy soil is teeming with life, from tiny microbes to larger organisms like earthworms.
    - Emphasize the importance of soil biota for nutrient cycling, plant growth and soil structure.
2. **Field observation** (45 minutes):
    - Divide participants into small groups and assign each group a section of the field.
    - Instruct them to carefully dig a small pit (around 30 cm deep and wide).
    - Ask them to observe the soil closely, looking for signs of life such as:
        - earthworms of various sizes and colours;
        - small white flecks (nematodes);
        - tiny insects or mites scurrying around;
        - dark, crumbly soil structure.
3. **Sample collection** (15 minutes): (Optional)
    - If magnifying glasses are available, participants can use them to get a closer look at any organisms they find.
    - For further observation, participants can collect a small sample of soil in a Ziplock bag.
4. **Group discussion** (30 minutes):
    - Bring everyone together and have each group share its observations.
    - Discuss the different types of organisms they found and their roles in the soil ecosystem.
    - Use handouts with pictures for identification if needed.
    - Facilitate a discussion on how farming practices can influence soil life.
    - Explore practices that promote a healthy soil biota, such as composting, cover cropping and reducing tillage.

5. **Wrap-up** (15 minutes):
    - Briefly summarize the key points of the exercise.
    - Emphasize the importance of taking care of the living soil for sustainable crop production.
    - Encourage participants to continue observing their soil and experiment with practices that promote soil health.

Additional tips

- Consider inviting a soil scientist or extension worker to provide further expertise during the session.
- If time allows, conduct the exercise at different stages of the cropping cycle to observe changes in soil life.
- Encourage participants to share their experiences and knowledge with other farmers in the community.

By participating in this interactive field exercise, farmers will gain a deeper understanding of the importance of living soils and how their management practices can contribute to a healthy and productive agricultural system.

Notes for discussion

1. **The hidden world of living soil**
    - Imagine a bustling underground city full of life! Unlike regular soil, living soil is teeming with beneficial organisms:
        - **microscopic decomposers (bacteria)** break down organic matter into plant food (nutrients);
        - **fungi** act as a hidden network, connecting plant roots to water and nutrients further away;
        - **micro-predators (protozoa and nematodes)** keep the bacteria and fungi populations in check for a balanced ecosystem;
        - **larger creatures (arthropods and earthworms)** tunnel through the soil, creating air pockets for healthy root growth and drainage.
2. **Benefits of a thriving soil community**
    - **It is a natural fertilizer factory**: It decomposes organic matter to provide a steady supply of nutrients for your plants, reducing reliance on chemical fertilizers.
    - **It produces healthy and happy plants**: Constant nutrients and good aeration lead to stronger, more disease-resistant plants with higher yields.
    - **It improves soil structure**: The breakdown of organic matter and creature tunnelling create a crumbly structure that retains water well and drains excess rain.
3. **Cultivating the bounty of living soil**
    - **Minimize disruptions**: To reduce tilling in order to avoid harming beneficial organisms, consider no-till or minimal tillage practices.
    - **Add compost**: Compost feeds microbes and provides habitat for larger creatures, introducing a surge of life.
    - **Plant cover crops**: These crops add organic matter, suppress weeds, and attract beneficial organisms.
    - **Rotate crops**: This prevents nutrient depletion and encourages a wider diversity of soil life.

By implementing these practices, you can transform your soil into a thriving ecosystem that supports healthy, high-yielding crops!

Field exercise 2: *Mastering soil sampling*

Introduction

Have you ever wondered what is going on beneath the surface of your fields? Just as

you would not guess someone's health by just looking at them, healthy soil needs a check-up too! Soil sampling and testing is like taking a peek under the hood of your farm. It reveals what nutrients your soil has in abundance, what it might be lacking, and even its overall health.

Why is this important? Knowing this information allows you to make informed decisions to get the most out of your land. Think of it like this: if you knew your car needed more oil, you would not keep running it dry, right? By understanding your soil's needs, you can ensure that it is in top shape to nourish your crops and maximize your harvest.

Objectives

- Allow farmers to explain the importance of soil sampling for informed decision-making.
- Allow farmers to demonstrate proper techniques for collecting representative soil samples.
- Allow farmers to understand the importance of proper sample handling and storage.

Materials

- Soil sampling tools (spade, auger, or soil probe)
- Clean buckets or containers for collecting samples
- Ziplock bags or labelled envelopes
- Markers
- A GPS device (optional)
- A large map of the field (optional)
- Handouts with soil sampling instructions and diagrams (optional).

Procedure

1. **Introduction** (15 minutes):
    - Discuss the importance of soil testing in order to understand nutrient deficiencies and optimizing fertilizer application.
    - Explain how proper soil sampling is crucial for obtaining accurate test results.
2. **Demonstration** (20 minutes):
    - The facilitator demonstrates the proper technique for collecting a representative soil sample:
        - **Selecting a representative area**: Avoid sampling near edges, compost piles or areas with unusual conditions.
        - **Taking a sub-sample**: Collect soil from a specific depth (usually 0–15 cm, or as recommended for the crop).
        - **Combining sub-samples**: Mix subsamples from the chosen area in a clean bucket.
        - **Preparing the final sample**: Take a subsample from the mixed soil in the bucket to send to the lab.
3. **Hands-on practice** (45 minutes):
    - Divide the participants into small groups and provide each group with sampling tools and containers.
    - Assign each group a designated area of the field (use a map for larger fields).
    - Guide participants through the process of collecting their own soil samples following the demonstrated technique.
4. **Sample handling and storage** (15 minutes):
    - Explain the importance of proper labelling each sample bag/envelope should be clearly marked with:
        - the farmer's name;
        - the field location (and possibly GPS coordinates);
        - the date of collection; and
        - the crop grown in the area.

- Discuss the proper storage and transportation of samples: keep them cool and dry until they reach the testing lab.

5. **Group discussion** (20 minutes):
   - Bring everyone together and discuss any challenges faced while collecting samples.
   - Address any questions regarding soil testing procedures and interpretation of results.
6. **Wrap-up** (15 minutes)
   - Briefly summarize the key steps of proper soil sampling:
     - Emphasize the importance of soil testing for informed decision-making on fertilizer application and soil management practices.
     - Encourage participants to use this knowledge for future soil testing needs on their farms.

Additional tips

- Consider inviting a lab representative to explain the soil testing process and analysis offered.
- When sending samples to a lab, provide participants with the necessary information and contact details.
- Encourage participants to compare their soil test results and discuss them in future sessions.

By actively participating in this exercise, farmers will gain the practical skills and knowledge for proper soil sampling, which will empower them to make informed decisions for improved soil health and crop productivity.

Notes for discussion

Get more out of your land: take a soil test!

You wouldn't guess someone's health by just looking; similarly, you can't tell what your soil needs without a test. Soil testing is like taking your soil to the doctor!

Why is this important?

- **Save money**: You will only add what your soil needs, not waste money on unnecessary things.
- **Happy crops, happy you**: Healthy soil with the right nutrients means stronger plants and bigger harvests!

What will we cover?

- **Taking a sample**: It's easy! Learn how to collect a small amount of soil for testing.
- **Understanding the results**: We'll break down the results in plain language, so you know exactly what your soil needs.
- **Feeding your soil**: Based on the test, we will discuss how to give your soil the nutrients it craves.

Let's work together to unlock the hidden potential of your soil and grow healthier, happier crops!

Field exercise 3: *Unveiling the water-holding power of your soil*

Introduction

Have you ever wondered how much water your precious soil can actually retain? Understanding your soil's water holding capacity (WHC) is like knowing the size of a hidden reservoir beneath your feet. It tells you how much water your crops can access for healthy growth, and how much might be wasted as runoff.

Knowing your WHC helps you make smarter decisions about watering, saving you time, money and that precious resource – water! Let's dive in and explore why, what and how to estimate this vital soil characteristic.

Objectives

- Allow farmers to be able to define soil WHC.
- Allow farmers to appreciate the importance of WHC for plant growth and irrigation management.
- Allow farmers to gain hands-on experience in a simple method to estimate WHC.

Materials

- Transparent containers (e.g. graduated cylinders, plastic bottles) with lids or stoppers
- Measuring cups or scales
- Dry soil (sieved if necessary)
- An oven (optional, for drying soil)
- Markers
- Handouts explaining WHC and the procedure (optional).

Procedure

1. **Introduction** (15 minutes):
    - Discuss the concept of soil WHC – i.e. the amount of water that soil can store and make available to plants.
    - Explain the importance of WHC for plant growth: a sufficient WHC allows plants to access water between rain or irrigation events.
    - Briefly introduce the simple estimation method used in this exercise.
2. **Preparing the materials** (15 minutes):
    - Label the transparent containers with group names or sample locations.
    - Pre-heat the oven to 105 °C (optional) if drying soil in an oven is chosen.
3. **Soil sample collection** (10 minutes):
    - Guide participants on how to collect representative soil samples from their designated areas of the field.
    - Emphasize collecting soil from the root zone depth of their main crop (usually the top 15 cm).
4. **Estimating WHC** (30 minutes):
    - Divide participants into small groups and provide each group with materials.
    - Instruct them to measure and record a specific amount of dry soil (e.g. 100 g) in their container.
    - Demonstrate how to slowly add measured amounts of water (e.g. 10 ml at a time) to the soil, mixing gently after each addition.
    - Recommend stopping water addition when water starts draining freely from the bottom of the container (becomes saturated).
    - Record the total amount of water added for each container.
5. **Optional: drying soil samples** (variable time):
    - If using an oven for drying, explain the process and safety precautions.
    - Have the participants place their wet soil samples in the oven for drying (around 24 hours) and record the weight after drying.
6. **Calculations and discussion** (30 minutes):
    - Guide participants on how to calculate the estimated WHC for their samples using one of the following methods:
        - **without oven drying:** WHC (%) = (weight of wet soil – weight of dry soil) / weight of dry

soil x 100 (if dry soil weight wasn't measured, assume 100 g);

- **with oven drying**: WHC (%) = (weight of wet soil – weight of oven - dried soil) / weight of oven-dried soil x 100.

- Facilitate a group discussion on the results.
- Discuss the factors that affect the WHC (soil texture, organic matter content).
- Encourage participants to interpret their results in relation to their soil type and crop water needs.

7. **Wrap-up** (15 minutes):
   - Briefly summarize the importance of WHC and the simple method used for estimation.
   - Emphasize the value of understanding WHC for optimizing irrigation practices and water conservation.
   - Encourage participants to consider the factors that can improve WHC in their fields (e.g. adding organic matter).

Additional tips

- Encourage participants to compare their WHC estimates and discuss possible reasons for variations.
- Consider relating the exercise to local rainfall patterns to emphasize the importance of WHC during dry periods.
- Encourage participants to explore more advanced soil testing methods for a precise determination of WHC.

By participating in this hands-on experience, farmers will gain a practical understanding of the soil's WHC and its significance for their farming practices. This knowledge can empower them to make informed decisions regarding irrigation scheduling and soil management strategies for improved water use efficiency and crop production.

Notes for discussion

Have you ever wondered how much water your soil can retain, i.e. its WHC, which is like a built-in reservoir for your crops. Knowing your WHC is like knowing the size of that reservoir. It tells you how much water your plants can access and how much might be wasted. This knowledge helps you water smarter, saving time, money and that precious resource – water! Let's explore why WHC matters and how we can estimate it for efficient irrigation and thriving crops.

How can we estimate WHC?

There are lab tests, but there are also simple ways to get a rough idea:

- **Soil texture**: Sandy soils hold less water than clay soils: is the soil gritty (sand) or sticky (clay)?
- **The 'feel test'**: Grab a handful of moist soil and squeeze it: crumbly means good drainage, but too crumbly might mean low WHC; a muddy mess indicates high WHC but possible drainage issues.

Field exercise 4: *Unveiling the hidden treasure: soil organic matter test*

Introduction

Have you ever considered the hidden wealth beneath your feet? Today, we will embark on a treasure hunt of sorts, but instead of gold or jewels, we will be uncovering the hidden bounty of your soil: organic matter.

Organic matter is like black gold for your farm. It acts as a natural fertilizer factory, improves water retention, and fosters a thriving ecosystem of beneficial organisms – all crucial for healthy crops and bountiful harvests.

Through a simple soil test, we will unlock the secrets of your soil's organic matter content. Let's get started on this exciting journey of discovery and learn how to nurture this hidden treasure for a more productive and sustainable future for your farm!

Objectives

- Allow farmers to understand the importance of soil organic matter (SOM) for soil health.
- Allow farmers to be exposed to a simple field test for estimating SOM.
- Allow farmers to appreciate the benefits of practices that increase SOM content in their fields.

Materials

- Transparent jars or glasses with lids (the same size for all participants)
- Hydrogen peroxide (3%) solution for which a safety data sheet is required
- Measuring spoons or graduated cylinders
- Straws or stirrers
- Masking tape and markers for labelling
- Handouts explaining SOM and the field test procedure (including safety information for hydrogen peroxide)
- Optional: Data table for recording observations.

Procedure

1. **Introduction** (15 minutes):
    - Introduce the concept of SOM – the decomposed remains of plants and animals in the soil.
    - Explain the importance of SOM for soil health (i.e. that it improves WHC, nutrient cycling and soil structure).
    - Briefly introduce the simple field test used in this exercise for estimating SOM levels.
2. **Safety briefing** (10 minutes):
    - Discuss the safe handling of hydrogen peroxide (wear gloves and eye protection, and avoid contact with skin and clothing).
    - Stress that the solution must be kept away from children and pets.
3. **Soil sample collection** (10 minutes):
    - Guide participants on how to collect representative soil samples from their designated areas of the field (usually top 15 cm).
    - Encourage that each participant collects similar amounts of soil.
4. **Field test demonstration** (15 minutes):

    The facilitator demonstrates the test procedure:
    - Label jars with participant names or sample locations.
    - Measure and add equal amounts of soil (e.g. 2 tablespoons) to each jar.
    - Carefully pour a measured amount of hydrogen peroxide solution (e.g. 10 ml) into each jar.
    - Observe the reaction: fizzing indicates the presence of organic matter breaking down the hydrogen peroxide.
5. **Field test activity** (20 minutes):
    - Distribute materials to participants and guide them through the test procedure following the demonstration.
    - Encourage participants to observe the level of fizzing and record their observations in the data table (if provided).

6. **Discussion and explanation** (20 minutes):
    - Facilitate a group discussion on the observed reactions.
    - Explain that a higher level of fizzing suggests a higher SOM content.
    - Discuss the factors influencing SOM levels (plant residues, tillage practices).
    - Emphasize that this is a simple test and may not provide precise measurements.
7. **Wrap-up** (15 minutes):
    - Briefly summarize the importance of SOM and the simple field test for estimation.
    - Encourage participants to consider practices that can increase SOM in their fields (e.g. cover cropping, compost application, reduced tillage).
    - Discuss the importance of regular soil testing for a more accurate assessment of SOM content.

Additional tips

- Encourage participants to compare their observations and discuss potential reasons for variations.
- Link the exercise to the benefits of SOM for improved crop growth and reduced water use.
- Emphasize that this is a preliminary test and doesn't replace professional soil testing for detailed SOM analysis.
- Consider inviting a soil scientist or extension worker to discuss more advanced SOM testing methods.

By participating in this interactive exercise, farmers will gain a basic understanding of SOM and its significance for their land. This can motivate them to implement practices that promote SOM content, leading to long-term improvements in soil health and agricultural productivity.

Notes for discussion

Hydrogen peroxide is not the only way to unearth the riches hidden within your soil – its organic matter content! Some simple methods to estimate this valuable resource are as follows:

1. **The 'feel test'**
   This is a simple and quick way to get a rough idea of SOM content as follows:
    - Grab a handful of moist soil.
    - Squeeze it firmly in your hand.
    - Observe how the soil behaves:
        - **crumbly and falls apart easily** – low SOM content; sandy soils tend to feel this way;
        - **forms a loose ball that crumbles with slight pressure** – moderate SOM content, loam soils often exhibit this texture;
        - **sticky and forms a tight ball that resists crumbling** – high SOM content; clay soils often feel this way.
2. **The 'loss on ignition' test**
   This method requires specialized equipment and is usually conducted in a lab; however, some agricultural extension offices might offer this service. The test involves heating a soil sample at a high temperature, burning off organic matter. The weight difference before and after burning provides an estimate of SOM content.
3. **Visual soil assessment**
   Experienced farmers can often estimate SOM content based on visual observations:
    - **darker soil colour**: This generally indicates higher SOM content.
    - **visible presence of organic materials**: Look for earthworm castings, plant

residues and decomposing matter. Soil with more organic material will have a more visible presence of these elements.

4. **Commercial SOM test kits**
   Some companies offer soil test kits specifically designed to estimate organic matter content. These kits often involve simple colorimetric tests and provide instructions for interpretation.

Note: While these methods offer a general idea of SOM content, they are not as precise as a formal laboratory test using hydrogen peroxide or other chemical methods. For a more accurate assessment, consider contacting your local agricultural extension office for professional soil testing services.

Field exercise 5: *Unveiling the hidden world: exploring soil biodiversity*

Introduction

Imagine your soil teeming with life, a hidden world buzzing with activity, which reflects a healthy soil. Beyond just dirt, healthy soil is a living ecosystem filled with a diverse cast of creatures, from microscopic decomposers to industrious earthworms.

Farmer Field Schools sub-group report in plenary after the agro-ecosystem analysis

Why is this hidden world so important? Think of it as nature's secret weapon for your farm! This incredible biodiversity plays a crucial role in plant health and crop yields. Let's delve into the fascinating world of soil life and explore how fostering biodiversity can benefit your crops and your profits!

Objectives

- Allow farmers to appreciate the importance of soil biodiversity for healthy crops.
- Allow farmers to be able to identify some key indicators of a diverse soil biota.
- Allow farmers to understand how their practices can influence soil life.

Materials

- Shovels or spades
- Large white sheets or tarps
- Hand lenses or magnifying glasses (optional)
- Sorting trays or shallow containers (optional)
- Ziplock bags (optional)
- Reference sheets with pictures of common soil organisms (earthworms, mites, nematodes)
- Data sheets for recording observations (optional)
- Masking tape and markers for labelling.

Procedure

1. **Introduction** (15 minutes):
    - Briefly discuss the concept of soil biodiversity, i.e. the variety of living organisms that inhabit the soil.
    - Explain that healthy soil teems with life, from microscopic microbes to larger creatures like earthworms.
    - Emphasize the crucial role of soil biota in nutrient cycling and decomposition, and in maintaining soil structure, all essential for healthy plant growth.
2. **Setting the stage** (10 minutes):
    - Briefly discuss the importance of minimizing disturbance during the exercise to maximize the chance of observing soil organisms in their natural environment.
3. **Soil sample collection** (20 minutes):
    - Divide participants into small groups and assign each group a designated area of the field.
    - Instruct them to carefully dig a small pit (around 30 cm deep and wide) at their designated spot.
    - Ask them to gently remove a thin layer of topsoil (around 5 cm) and place it on the labelled white sheet/tarp spread nearby.
4. **Extracting soil life** (20 minutes):
    - Guide participants in slowly and carefully breaking apart the topsoil layer on the sheet.
    - Encourage them to look for signs of larger organisms such as earthworms, beetles or millipedes.
    - Some organisms may become more active as they are exposed to light and air.
5. **Observation and identification** (30 minutes):
    - If available, distribute hand lenses or magnifying glasses for closer observation.
    - Encourage participants to search for smaller creatures like mites, springtails, or even nematodes.
    - Ask them to note the colour, texture and overall structure of the soil.

- Encourage participants to use reference sheets to identify the organisms they find or record their observations on data sheets (if provided).
- Consider using sorting trays for easier observation and separation of different organisms (optional).

6. **Group discussion and sharing** (30 minutes):
   - Bring everyone together and have each group share its observations.
   - Discuss the variety of organisms found and their potential roles in the soil ecosystem.
   - Explore how different soil characteristics (e.g. colour, structure) might reflect variations in soil life.
   - Facilitate a discussion on the importance of a diverse soil biota for healthy plant growth.
   - Explore how practices such as reduced tillage, cover cropping and composting can promote a thriving soil community.
7. **Wrap-up** (15 minutes):
   - Briefly summarize the key points of the exercise and the importance of soil biodiversity.
   - Encourage participants to continue observing their soil for signs of life and consider practices that can enhance soil biota in their fields.
   - Discuss the long-term benefits of a healthy soil ecosystem for sustainable crop production.

Additional tips

- Consider conducting the exercise at different times of the day or year to observe variations in soil activity.
- Encourage participants to collect some soil samples (using ziplock bags) for further observation at home (optional).
- Invite a soil scientist or extension worker to provide further insights into soil biota and its role in agriculture.
- Encourage participants to share their experiences and knowledge with other farmers in the community.

By actively participating in this field exercise, farmers will gain a deeper appreciation for the hidden world of soil organisms and their critical role in a healthy and productive agricultural system. This newfound knowledge can empower them to make informed decisions about their farming practices to promote soil biodiversity and ensure long-term sustainability.

Notes for discussion

While there are advanced lab tests, here are some simple ways to get a feel for your soil's biodiversity:

1. **The mini-dig**
   Grab a shovel and dig a small hole about a foot deep. Take a close look at the soil you've removed. Here's what you're looking for:
   - **Variety is key**: The more types of creatures you see, the better; earthworms, beetles, mites and even millipedes are all good signs.
   - **Nature's recyclers**: Look for signs of decomposition like leaves breaking down or other organic matter; this indicates a healthy population of decomposers, crucial for nutrient cycling.
   - **Tunnels and channels**: Earthworms and other creatures leave behind tunnels as they burrow through the soil; these channels improve drainage and aeration for your plants.

2. **The seed bait test**
   This simple test attracts creatures that feed on organic matter. Here's how:
   - Bury a small cloth bag filled with a few grains of wheat or corn in your soil.
   - Mark the spot and wait a few days.
   - After a few days, dig up the bag. If the seeds are gone, you likely have a healthy population of decomposers and other organisms feasting below the surface!
3. **The flip and observe**
   This quick test provides a glimpse of some of the larger creatures living in your soil.
   - Find a spot in your field and carefully flip over a flat rock or piece of wood that has been lying on the soil for a while.
   - Look underneath for any critters that may have taken shelter there; earthworms, millipedes and other soil dwellers might be hiding beneath.

Remember

These are just a few starting points. The more life you see, the better, but even a few creatures indicate some level of biodiversity.

5.2 Land and management-based exercises

Field exercise 1: *Exploring the effectiveness of stone barriers*

Introduction

Have you ever noticed rock walls or stone lines winding through fields? These are not just decorative – they are traditional land management tools known as stone barriers. Today, we will delve into the world of stone barriers, exploring their effectiveness in modern land management practices. We will discuss the potential benefits they offer, from controlling soil erosion to creating microclimates, and explore how they might fit into your own land management strategies.

Objectives

- Allow farmers to understand the purpose and potential benefits of stone barriers in soil erosion control.
- Allow farmers to be able to identify suitable locations for stone barrier construction.
- Allow farmers to gain practical experience in constructing a simple stone barrier.

Materials

- Rocks or stones of various sizes (a sufficient amount for small demonstration barrier)
- Shovels or spades
- Levels (optional)
- A tape measure
- Stakes or flags to mark the barrier location
- Handouts with diagrams and instructions on stone barrier construction (optional).

Procedure

1. **Introduction** (15 minutes):
   - Briefly discuss the problem of soil erosion and its negative impacts on farmland.
   - Introduce the concept of stone barriers as a simple and low-cost technique to control soil erosion on slopes.
   - Explain how stone barriers disrupt the flow of water, reducing its erosive power and encouraging infiltration.
2. **Site selection** (20 minutes):
   - Take participants to a sloping area in the field that is prone to erosion (gully or runoff path).
   - Discuss the importance of choosing an appropriate location for the stone barrier:

    - areas with concentrated water flow;
    - above cultivated fields or valuable infrastructure.
  - Facilitate a group discussion to identify a suitable location within the chosen slope.
  - Mark the chosen location with stakes or flags.

3. **Demonstration and planning** (20 minutes):
  - The facilitator demonstrates the basic steps of constructing a stone barrier:
    - Dig a shallow trench following the desired barrier line (around 30-cm deep).
    - Place larger stones at the base for stability.
    - Fill the trench with a mixture of different sized stones, creating a packed and stable structure.
    - Emphasize the importance of a slight outward slope on the downhill side of the barrier for water deflection.
  - Use a tape measure and a level (optional) to ensure the proper positioning and alignment of the barrier.
  - Discuss the dimensions of the barrier based on the slope and water flow (height, width and length).
4. **Barrier construction** (45 minutes):
  - Divide participants into small groups and provide them with the necessary tools and materials.
  - Guide them through the construction process based on the demonstration and discussion.
  - Encourage participants to work collaboratively and ensure proper stone placement for a stable barrier.
5. **Group discussion and evaluation** (20 minutes):
  - Bring everyone together and discuss the construction process and any challenges faced.
  - Evaluate the constructed barrier for stability, alignment and effectiveness in diverting water flow.
  - Encourage participants to share their thoughts on the potential benefits and limitations of stone barriers.
6. **Wrap-up** (15 minutes):
  - Briefly summarize the importance of stone barriers for soil erosion control.
  - Emphasize the importance of choosing appropriate locations and proper construction techniques for optimal effectiveness.
  - Encourage participants to consider using stone barriers in their own fields to protect their land from erosion.

Additional tips

- Consider inviting a soil conservation specialist to provide further insights into erosion control methods and best practices.
- If available, show pictures or videos of different types of stone barriers used in various situations.
- Encourage participants to discuss the cost-effectiveness and maintenance requirements of stone barriers.
- Depending on time constraints, participants can design a plan for constructing a larger stone barrier in a designated area of the field.

By participating in this interactive field exercise, farmers will gain valuable knowledge and practical skills regarding stone barriers as a simple yet effective method for controlling

soil erosion. This newfound knowledge can empower them to protect their land, improve soil health, and ensure long-term agricultural productivity.

Field exercise 2: *Exploring the power of cover crops*

Introduction

Have you ever wondered if your fields could benefit from a green off-season coat? Today, we will explore the power of cover crops, i.e. plants grown between your main cash crops to protect and improve your soil.

These are not just weeds taking up space; cover crops are like nature's green blanket, offering a wealth of benefits for your land. We will discuss how they suppress weeds, prevent erosion, and even add nutrients to your soil, all while promoting a healthy ecosystem for thriving future harvests!

Objectives

- Allow farmers to understand the benefits of cover crops for soil health and crop production.
- Allow farmers to be able to identify different types of cover crops suitable for their local conditions.
- Allow farmers to gain practical experience in planting a cover crop.

Materials

- Different types of cover crop seeds for small demonstration plots
- Shovels or spades
- Rakes
- Markers or flags
- Handouts with information on cover crops (benefits, types, planting guides) (optional).

Procedure

1. **Introduction** (15 minutes):
    - Briefly discuss the concept of cover crops, i.e. plants grown between your main cash crops to protect and improve your soil.
    - Explain the various benefits of cover crops:
        - Suppressing weeds
        - Fixing nitrogen in the soil
        - Improving SOM content
        - Enhancing soil moisture retention
        - Reducing soil erosion.
2. **Cover crop selection** (20 minutes):
    - Introduce participants to different types of cover crops commonly used in the region.
    - Discuss factors to consider when selecting a cover crop:
        - Climate and growing season
        - Soil type
        - Intended benefits (weed suppression, nitrogen fixation)
        - Management practices (termination method).
    - Use handouts or pictures to showcase different cover crop options.
    - Facilitate a group discussion to identify suitable cover crop choices for their local context.
3. **Planting demonstration** (20 minutes):
    - Choose a suitable location within the field for the cover crop demonstration plot.
    - The facilitator demonstrates the basic steps of cover crop planting:

- Briefly prepare the soil bed (light tilling or raking depending on soil conditions).
- Sow seeds at the recommended rate and depth for the chosen cover crop.
- Lightly cover the seeds with soil.
- Mark the plot boundaries with flags or markers.

o Emphasize proper planting depth and seed distribution for successful germination.

4. **Participant seeding practice** (30 minutes):
   - o Divide participants into small groups and provide them with necessary tools, seeds, and assigned areas for planting their own small cover crop plots.
   - o Guide them through the planting process based on the demonstration.
   - o Encourage participants to discuss any questions or challenges they encounter during planting.
5. **Group discussion and planning** (20 minutes):
   - o Bring everyone together and discuss the planting experience.
   - o Address any questions regarding cover crop management practices (watering, termination methods).
   - o Encourage participants to share their chosen cover crops and their anticipated benefits.
   - o Briefly discuss plans for monitoring the cover crop growth and its potential impact on the soil.
6. **Wrap-up** (15 minutes):
   - o Briefly summarize the importance of cover crops for sustainable agriculture.
   - o Emphasize the importance of selecting appropriate cover crops and following proper planting practices for optimal results.
   - o Encourage participants to consider integrating cover crops into their own cropping systems to improve soil health and crop productivity.

Additional tips

- Consider inviting an agronomist or extension worker to provide further insights into cover crop selection and management strategies.
- If possible, visit a nearby field with a mature cover crop to showcase its growth and benefits visually.
- Encourage participants to share their experiences and observations with other farmers in the community.
- Depending on time constraints, participants can design a plan for incorporating cover crops into their existing cropping calendar.

By actively participating in this field exercise, farmers will gain valuable knowledge and practical skills regarding cover crops. This newfound knowledge can empower them to improve their soil fertility, manage weeds organically, and ultimately achieve sustainable agricultural practices.

Field exercise 3: *Mastering earthworks for improved land management*

Introduction

Have you ever looked at your land and envisioned its full potential?

Mastering earthworks is like sculpting your land for success!

This is not just about moving dirt; it is about strategically shaping your landscape to improve drainage, irrigation and overall productivity. Today, we will explore the art and science of earthworks, from basic techniques to considerations for different land types.

By learning how to work with the natural contours of your land, you can unlock its hidden potential and pave the way for a more sustainable and profitable future!

Objectives

- Allow farmers to understand the concept of earthworks and their benefits for land management.
- Allow farmers to be able to identify different types of earthworks suitable for their specific needs.
- Allow farmers to gain hands-on experience in constructing a simple earthwork structure.

Materials

- Depending on chosen earthwork type:
  - Shovels, spades or picks (for digging)
  - Wheelbarrows (for transporting materials)
  - Levels (for ensuring proper slope)
  - Stakes or flags (for marking boundaries)
  - Rakes or smoothing tools
  - Construction materials (e.g. stones, sandbags), if applicable
  - Handouts with diagrams and instructions on different earthwork types (optional).

Procedure

1. **Introduction** (15 minutes):
   - Briefly introduce the concept of earthworks, i.e. planned manipulations of the soil surface to achieve specific land management goals.
   - Discuss the potential benefits of earthworks in agriculture:
     - Improved water management (irrigation, drainage, erosion control)
     - Increased land productivity
     - Reduced soil erosion
     - Enhanced soil fertility.
2. **Earthwork selection** (20 minutes):
   - Introduce participants to different types of earthworks commonly used in agriculture, such as:
     - Drainage ditches
     - Raised beds
     - Diversion channels
     - Terraces
     - Bunds.
   - Use handouts or pictures to showcase different earthwork options.
   - Facilitate a group discussion to identify the most suitable earthwork type for a specific land management challenge faced by the participants (e.g. drainage issues, soil erosion on slopes).
   - Consider factors like topography, soil type and crop requirements when selecting the earthwork.
3. **Demonstration and planning** (20 minutes):
   - Choose a suitable location within the field for the demonstration earthwork structure.
   - Demonstrate the construction process for the chosen earthwork type:
     - marking the boundaries and dimensions of the earthwork using stakes or flags;
     - digging or shaping the soil according to the specific design (e.g. digging ditches, creating raised beds);
   - Indicating proper slope angles and stability for the chosen earthwork;

- demonstrating the use of construction materials (stones, sandbags) if applicable for reinforcement.

4. **Construction practice** (45 minutes):
   - Divide participants into small groups and provide them with necessary tools and materials.
   - Assign each group a designated area within the field to construct a smaller version of the chosen earthwork.
   - Guide them through the construction process based on the demonstration.
   - Encourage participants to work collaboratively and ensure proper construction techniques for a functional and stable earthwork.
5. **Group discussion and evaluation** (20 minutes):
   - Bring everyone together and discuss the construction experience.
   - Evaluate the constructed earthworks for proper dimensions, slope angles and overall functionality.
   - Address any questions regarding maintenance and long-term use of the earthwork.
   - Encourage participants to share their thoughts on the potential benefits of the chosen earthwork for their specific land management needs.
6. **Wrap-up** (15 minutes):
   - Briefly summarize the importance of earthworks as a valuable tool for land management.
   - Emphasize the importance of selecting the appropriate earthwork type and following proper construction techniques for optimal results.
   - Encourage participants to consider using earthworks in their own fields to address specific land management challenges and improve agricultural productivity.

Additional tips

- Consider inviting a soil conservation specialist or extension worker to provide further insights into different earthwork types, design considerations and best practices.
- If possible, visit a nearby field with existing earthworks to showcase their real-world application and benefits.
- Encourage participants to discuss the cost-effectiveness and maintenance requirements of different earthwork options.
- Depending on time constraints, participants can design a plan for constructing a larger earthwork structure in a designated area of the field based on their identified land management need.

By participating in this interactive field exercise, farmers will gain valuable knowledge and practical skills regarding earthworks. This newfound knowledge can empower them to make informed decisions about land management practices, optimize water use, and ultimately achieve increased agricultural production and sustainability.

Field exercise 4: *Unveiling the power of grass strips*

Introduction

Look beyond the green borders around your fields – they might hold more power than you think!

Today, we will unveil the hidden potential of grass strips in land management. These seemingly simple strips of grass act as nature's unsung heroes, playing a crucial role in

protecting your soil and improving your overall farm health.

We will explore how grass strips help control erosion, filter runoff water, and even create habitat for beneficial insects.

By understanding the power of these green borders, you can transform them from simple dividers into valuable tools for a more sustainable and productive farm!

Objectives

- Allow farmers to understand the benefits of grass strips for soil and water conservation.
- Allow farmers to be able to identify suitable locations for establishing grass strips.
- Allow farmers to gain practical knowledge on grass strip establishment and management.

Materials

- Transparent containers (e.g. graduated cylinders)
- Measuring cups or scales
- Dry soil samples (sieved if necessary)
- Water
- Markers
- Grass seed mix suitable for local conditions (enough for small demonstration plot)
- Shovels or spades
- Rakes
- Stakes or flags to mark the grass strip boundaries
- Handouts with information on grass strips (benefits, establishment, management) (optional).

Procedure:

1. **Introduction** (15 minutes):
    - Briefly introduce the concept of grass strips (i.e. narrow bands of perennial grasses established alongside fields or waterways).
    - Explain the benefits of grass strips for soil and water conservation:
        - They reduce soil erosion from wind and water runoff.
        - They filter pollutants and sediment before they reach waterways.
        - They improve water infiltration into the soil.
        - They provide habitat for beneficial insects.
2. **Site selection and demonstration of benefits** (20 minutes):
    - Take participants to a sloping area within the field or near a waterway (drainage ditch, streambank).
    - Discuss the importance of choosing suitable locations for grass strips, such as:
        - areas prone to erosion (e.g. slopes, field edges);
        - alongside waterways to capture runoff.
    - Demonstrate the benefits of grass strips using the transparent containers by:
        - filling two containers with equal amounts of dry soil;
        - simulating rainfall by pouring water onto one container representing a field without a grass strip; and

- observing the faster erosion and runoff compared to the other container representing a field with a grass strip (less soil erosion and runoff).

3. **Grass strip establishment** (20 minutes):
   - Introduce participants to the chosen grass seed mix suitable for the local conditions.
   - Discuss factors to consider when establishing a grass strip:
     - time of planting (ideally before rainy season);
     - seedbed preparation (light tillage or herbicide application to control weeds);
     - seeding rate and depth; and
     - initial watering (if needed).
   - Use handouts or pictures to show how to lay the grass strips.
4. **Demonstration seeding** (20 minutes):
   - Choose a designated area within the field for the grass strip demonstration plot.
   - The facilitator demonstrates the basic steps of grass strip establishment:
     - briefly preparing the seedbed (light tilling or removing weeds);
     - sowing the grass seeds at the recommended rate using a broadcast spreader or by hand;
     - lightly raking the soil to incorporate the seeds; and
     - marking the boundaries of the grass strip plot with stakes or flags.
5. **Participants' discussion and planning** (20 minutes):
   - Bring everyone together and discuss how to lay the grass strips.
   - Address any questions regarding seed selection, planting methods and maintenance practices (e.g. watering, weed control).
   - Encourage participants to share their thoughts on the potential benefits of grass strips for their own fields.
   - Briefly discuss plans for monitoring the grass strip establishment and its impact on soil and water conservation.
6. **Wrap-up** (15 minutes):
   - Briefly summarize the importance of grass strips for sustainable agriculture.
   - Emphasize the importance of selecting appropriate locations, using suitable grass mixes, and following proper establishment practices for successful grass strips.
   - Encourage participants to consider incorporating grass strips into their own land management practices to improve soil health, water conservation and overall farm productivity.

Additional tips

- Consider inviting a soil conservation specialist or extension worker to provide further insights into grass strip design, establishment techniques and long-term benefits.
- If possible, visit a nearby field with an established grass strip to showcase its real-world application and effectiveness.
- Encourage participants to discuss the cost-effectiveness and maintenance requirements of grass strips compared to other erosion control methods.
- Depending on time constraints, participants can design a plan for establishing a larger grass strip in a designated area of the field based on their identified erosion concerns.

By participating in this interactive field exercise, farmers will gain valuable knowledge and practical skills regarding the benefits and establishment of grass strips. This newfound knowledge can empower them to implement sustainable land management practices that conserve soil, protect water quality, and enhance overall farm productivity.

Field exercise 5: *Unveiling the power of retention ditches*

Introduction

Have you ever felt as if your land were losing precious resources with every heavy rain? Retention ditches might be the answer!

These strategically placed channels are not just about drainage; they are powerful tools for land management.

Today, we will explore how retention ditches can capture runoff water, preventing erosion and saving this valuable resource for your crops.

We will discuss different types of ditches and their benefits, and how they can be integrated into your existing land management practices. Let's unlock the power of retention ditches and turn the flow of water from a challenge into an advantage for a healthier and more productive farm!

Objectives

- Allow farmers to understand the purpose and benefits of retention ditches for water management.
- Allow farmers to be able to identify suitable locations for constructing retention ditches.
- Allow farmers to gain practical knowledge on the design considerations and basic principles of retention ditch construction.

Materials

- Measuring tape
- Stakes or flags to mark the ditch location and boundaries
- A string line (optional)
- Levels (optional)
- Handouts with diagrams and explanations of retention ditches (optional)
- Pictures of different types of retention ditches (optional).

Procedure

1. **Introduction** (15 minutes):
    - Briefly introduce the concept of retention ditches, i.e. shallow, elongated channels designed to collect, store and control excess water runoff from fields.
    - Explain the benefits of retention ditches for water management:
        - They reduce soil erosion from heavy rainfall events.
        - They improve water infiltration into the soil for later crop use.
        - They mitigate flooding risks in low-lying areas.
        - They recharge groundwater resources (depending on local conditions).
2. **Discussion on site selection** (20 minutes):
    - Facilitate a group discussion on the importance of choosing suitable locations for retention ditches, such as:
        - areas prone to waterlogging or flooding;
        - below slopes or fields to capture runoff;

    - locations that consider the overall farm drainage pattern.
  - Emphasize the importance of minimizing disruption to existing field layouts and considering future maintenance access.
  - Guide participants on how to identify a potential location within the field for a retention ditch.

3. **Design considerations and demonstration** (20 minutes):
  - Introduce participants to key design considerations for retention ditches:
    - ditch dimensions (depth, width and length) based on expected water flow;
    - the slope of the ditch sides for stability; and
    - the outlet location and design to safely convey excess water.
  - Use handouts or pictures to showcase different types of retention ditches (e.g. V-shaped, trapezoidal).
  - The facilitator demonstrates a basic ditch layout using measuring tape, stakes and a string line (optional).
  - Briefly discuss the use of levels (optional) to ensure the proper slope for water flow and stability.
4. **Group discussion and planning** (20 minutes):
  - Encourage participants to discuss the challenges in, and considerations for, constructing a retention ditch in the chosen location.
  - Facilitate a group exercise where participants brainstorm and design a basic layout for a retention ditch on the field while considering the discussed factors.
  - Briefly discuss potential materials needed for reinforcement (if necessary) and basic maintenance practices for the ditch.
5. **Wrap-up** (15 minutes):
  - Briefly summarize the importance of retention ditches as a tool for improved water management in agriculture.
  - Emphasize the importance of careful planning, considering location, design and construction techniques for a functional and sustainable retention ditch.
  - Encourage participants to consult with extension workers or engineers for detailed design and construction guidance before implementing a retention ditch in their own fields.

Additional tips

- Consider inviting a soil conservation specialist or irrigation engineer to provide further insights into the retention ditch design, construction best practices, and potential impacts on the local water table.
- If possible, visit a nearby field with a retention ditch to showcase its real-world application and effectiveness.
- Encourage participants to discuss the long-term benefits and maintenance requirements of retention ditches compared to other water management strategies.
- Depending on time constraints and available resources, participants can develop a more detailed plan for constructing a small-scale demonstration ditch within the field (considering safety and proper disposal of excavated soil).

By participating in this interactive field exercise, farmers will gain valuable knowledge on the role of retention ditches in water management.

This newfound knowledge can empower them to make informed decisions about water control on their farms, potentially reducing soil erosion, improving water use efficiency, and ultimately enhancing agricultural productivity.

Field exercise 6: *Building resilience: exploring your farm's environment and climate risks*

Introduction

Our farms are like open books, constantly influenced by the world around them. Today, we will focus on the weather and climate, and how they impact our land management decisions. Just as you would not plant tomatoes when it is cold, understanding the environmental factors (rainfall, temperature and even potential pest pressures) helps us make informed choices.

But there is another layer to consider: climate change. We will explore how weather patterns might be shifting, with possibilities of more droughts or stronger storms. By understanding these factors, both the familiar weather and the changing climate, we can adapt our practices.

We can adjust planting times, watering strategies and other land management techniques to keep our farms healthy and productive, even as the world around us evolves. Let's become weather-wise farmers and ensure that our land thrives for years to come!

Objectives

- Allow farmers to gain an understanding of environmental factors and climate change impacts relevant to their farms.
- Allow farmers to be able to identify potential vulnerabilities and risks associated with their local environment and climate.
- Allow farmers to explore strategies and practices to enhance their farm's resilience to environmental and climate challenges.

Materials

- A large sheet of paper or flipchart
- Markers
- Pens and paper for note-taking
- Handouts with information on local environmental features, climate trends and potential climate risks (optional)
- Pictures or diagrams depicting different climate-resilient agricultural practices (optional)

Procedure

1. **Introduction** (15 minutes):
    - Briefly discuss the concept of environmental resilience (i.e. the ability of a system [farm] to adapt to and recover from environmental disturbances).
    - Introduce the concept of climate change and its potential impacts on agriculture (changing rainfall patterns, extreme weather events).
    - Emphasize the importance of understanding local environmental features and climate risks for building a resilient farm.
2. **Mapping the farm environment** (20 minutes):
    - Divide participants into small groups and provide them with large sheets of paper.
    - Instruct them to draw a basic map of their farms, including key features such as fields, water sources, slopes and vegetation.
    - Encourage them to discuss and mark any environmental factors that could potentially impact their farm (e.g. soil type, drainage patterns, pest pressures).

3. **Climate risk brainstorming** (20 minutes):
    - Facilitate a group discussion on the potential climate change risks relevant to the local area.
    - Use handouts or pictures as prompts (e.g. droughts, floods, increased pest outbreaks).
    - Encourage participants to share their experiences and concerns regarding past environmental challenges faced on their farms.
    - List all identified risks on a large flipchart or sheet of paper.
4. **Vulnerability assessment** (20 minutes):
    - Ask participants to consider the farm map they created and revisit the listed climate risks.
    - In their groups, encourage participants to discuss how each risk might affect their farms based on the identified environmental features; for example, a farm with poor drainage might be particularly vulnerable to heavy rainfall events.
    - Have each group share their vulnerability assessment with the whole group, adding their findings to the flipchart.
5. **Building resilience strategies** (20 minutes):
    - Introduce the concept of climate-resilient agricultural practices (i.e. strategies that help farms adapt to and mitigate environmental and climate risks).
    - Based on the identified vulnerabilities, brainstorm potential strategies for building resilience.
    - Use handouts or pictures as inspiration (e.g. water harvesting techniques for drought mitigation, cover cropping for soil health improvement).
    - Encourage participants to share their existing practices that contribute to farm resilience.
6. **Wrap-up** (15 minutes):
    - Briefly summarize the importance of understanding local environmental features and climate risks for building resilience.
    - Emphasize the value of collaborative learning and knowledge sharing in developing effective strategies for a more resilient farm.
    - Encourage participants to continue exploring climate-resilient practices and adapting their farm management accordingly.

Additional tips

- Invite a local climate expert or agricultural extension worker to provide further insights into specific climate risks and potential adaptation strategies.
- Conduct the exercise outdoors on a farm to allow participants to directly observe the environmental features they are discussing.
- Encourage participants to document their farm map or community map, their vulnerability assessment and identified resilience strategies for future reference.
- Depending on time constraints, participants can develop a simple action plan outlining specific practices they can implement to enhance their farm's resilience to identified risks.

By participating in this interactive field exercise, farmers will gain valuable knowledge and tools to assess their farm's environmental vulnerabilities and climate risks. This newfound awareness can empower them to make informed decisions and adopt practices that will increase their farm's resilience in the face of a changing environment.

Pest management excercise, Guadalcanal

5.3 Pests and pesticide management-based exercises

Field exercise 1: *Unveiling the bug brigade: building an insect zoo*

Introduction

An 'insect zoo' is not just about entertainment; it is an educational tool. This field exercise for FFS focuses on creating a mini-insect zoo to observe insect diversity and behaviour, and its ecological roles within the agricultural ecosystem.

Materials

- Large mesh cages or transparent containers (a sufficient number for small groups)
- Twigs, leaves, flowers, and small pots with soil (to create a mini-habitat within the cages)
- Hand lenses or magnifying glasses for each participant
- Observation trays or containers with lids
- Coloured markers or labels
- Identification guides or pictures of common insects (optional)
- Data sheets for recording observations (optional).

Procedure

1. **Introduction** (15 minutes):
    - Briefly discuss the vast diversity of insects in the agricultural ecosystem.

- Introduce the concept of an 'insect zoo' as a temporary observation, i.e. an environment for studying different insect species.

2. **Building your insect zoo** (20 minutes):
   - Divide participants into small groups and distribute mesh cages or containers; each group will create a mini-habitat inside their container.
   - Provide them with twigs, leaves, flowers, and small pots with soil to create a mini-habitat within each cage, mimicking a natural environment for the insects.
   - Encourage participants to use their creativity to design diverse mini-habitats within the cages.
3. **Responsible field collection** (30 minutes):
   - Instruct participants on safe and responsible insect collection methods; avoid harming them.
   - Guide participants to different areas of the field, encouraging them to actively search for insects by using nets (if available) or by gently coaxing them onto leaves for collection.
   - Emphasize collecting only a small number of insects to minimize disruption to the ecosystem.
   - Encourage participants to collect a variety of insects, including those they recognize and some unfamiliar ones.
4. **Zoo time**: observation and learning (45 minutes):
   - Instruct participants to carefully transfer their collected insects into their respective insect zoos (designated cages).
   - Provide them with hand lenses or magnifying glasses to closely observe the insects' physical characteristics and behaviour, and potential roles in the ecosystem.
   - Encourage participants to use coloured markers to record any distinguishing features of the insects they observe.
   - Facilitate a group discussion on the observed insects, encouraging participants to share their observations and try to classify the insects based on basic characteristics (e.g. wings, body shape).
   - If available, use identification guides or pictures to assist participants in identifying their collected insects.
   - Encourage participants to use data sheets (if provided) to document their observations, including the number and type of insects collected, and any notable behaviour patterns.
5. **Wrap-up and discussion** (15 minutes):
   - Discuss the importance of insect diversity for a healthy ecosystem, highlighting the roles of beneficial insects (predators, pollinators, decomposers) and potential pest insects.
   - Emphasize the importance of observing insect behaviour to understand their ecological function.
   - Encourage participants to continue observing insects in their fields and appreciate the valuable roles they play.
   - Answer any questions participants may have about insects and their roles in the farm ecosystem.
6. **Optional release or relocation** (time permitting):
   - If appropriate and regulations permit, participants can release the captured insects back into the field where they were collected.
   - Alternatively, they can relocate the insect zoo to a protected area within the farm, allowing the insects to continue living in their created mini-habitat.

Additional tips

- Consider inviting an entomologist or agricultural extension worker to provide further insights into insect identification, their roles in the ecosystem and responsible insect collection practices.
- Depending on time constraints, the exercise can focus on a specific insect group (e.g. beneficial insects), or participants can collect a broader variety.
- Encourage participants to document their insect observations with notes and pictures for future reference and identification practice.
- Remind participants of the importance of minimizing stress on the collected insects and ensure proper ventilation within the cages during observation periods.

By participating in this engaging field exercise, farmers will gain valuable, firsthand experience with insect diversity and their ecological roles.

Building and observing their own insect zoo can empower them to appreciate the importance of a balanced insect community for a healthy and sustainable agricultural ecosystem.

Insects' inspection during the agro-ecosystem analysis in Guadalcanal

Field exercise 2: *Friend or foe? Unveiling arthropod roles*

Introduction

This field exercise for FFS focuses on understanding the diverse roles of arthropods in the agricultural ecosystem, differentiating between beneficial and pest arthropods.

Materials

- Handouts with pictures and descriptions of common arthropods found in the local agroecosystem (e.g. beneficial insects, pest insects and other arthropods)
- Field guides or insect identification keys (optional)
- Magnifying glasses or hand lenses for each participant
- Observation trays or containers with lids
- Insect nets (optional)
- Data sheets for recording observations (including insect counts).

Procedure

1. **Introduction** (15 minutes):
    - Briefly discuss the vast diversity of arthropods within the agricultural ecosystem.
    - Introduce the concept that not all arthropods are pests; many play beneficial roles in maintaining a healthy agroecosystem.
2. **Arthropods unveiled: friend or foe?** (20 minutes):
    - Use handouts or pictures to showcase examples of common arthropods found in the local agroecosystem.
    - Highlight different categories:
        - Beneficial insects (e.g. ladybugs, lacewings, praying mantises) that help control pest populations
        - Pest insects (e.g. aphids, beetles, caterpillars) that damage crops
        - Other arthropods (e.g. spiders, mites, millipedes) that might not directly impact crops but contribute to the ecosystem's balance.
    - Discuss the distinguishing characteristics and ecological roles of each arthropod category.
    - Encourage participants to ask questions and share any prior experiences they have had with different arthropods in their fields.
3. **Field detectives**: identifying arthropods (30 minutes):
    - Guide participants to different areas of the field, encouraging them to actively search for arthropods by using nets (if available) or by gently coaxing them onto leaves for collection.
    - Emphasize the importance of careful handling to avoid harming the organisms
4. **Close observation**: unveiling identities (30 minutes):
    - Instruct participants to carefully transfer their collected arthropods into observation trays for closer examination with magnifying glasses.
    - Encourage them to use the provided handouts, field guides (if available) or their own knowledge to identify the arthropods they collected.
    - Facilitate a group discussion on their observations, prompting participants to categorize the collected arthropods

as beneficial, pests, or others based on their understanding.

5. **Beyond friend or foe: the bigger picture** (20 minutes):
    - Discuss the importance of maintaining a balanced arthropod community in the field.
    - Emphasize the role of beneficial arthropods in natural pest control and the importance of promoting their populations.
    - Encourage participants to brainstorm strategies they can implement in their own fields to create a habitat-friendly environment for beneficial arthropods (e.g. providing flowering plants for food sources, avoiding broad-spectrum insecticides).
6. **Wrap-up and action planning** (15 minutes):
    - Briefly summarize the importance of understanding the diverse roles of arthropods in the agricultural ecosystem.
    - Encourage participants to continue observing arthropods in their fields and appreciate the complex web of interactions that contribute to a balanced system.

As an optional activity, participants can develop a simple action plan outlining specific strategies they can implement to promote beneficial arthropods and manage pest populations more sustainably in their farms.

Additional tips

- Consider inviting an entomologist or agricultural extension worker to provide further insights into arthropod identification, their life cycles and the importance of maintaining a balanced arthropod community.
- Depending on time constraints, the exercise can focus on a specific group of arthropods relevant to the local crops (e.g. beneficial insects and their prey).

- Encourage participants to document their observations with notes, sketches, or pictures of the collected arthropods for future reference and identification practice.
- Remind participants of the importance of minimizing stress on the collected arthropods and ensure proper ventilation within the observation containers during observation periods.

By participating in this engaging field exercise, farmers will gain valuable knowledge about the diverse roles of arthropods in their fields.

This newfound understanding can empower them to adopt practices that promote a balanced arthropod community, minimizing reliance on insecticides and contributing to a more sustainable agricultural system.

Field exercise 3: *Unveiling the metamorphosis: exploring developmental stages of arthropods*

Introduction

Have you ever watched a caterpillar munch on leaves, wondering how it becomes a fluttering butterfly? Today, we'll be like bug detectives, following the amazing journey of insects as they transform from tiny eggs to full-grown adults.

This exercise is all about insect makeovers, a process called 'metamorphosis'. This occurs when insects change their bodies completely as they grow. We will be on the hunt for insects at different stages, i.e. egg, larvae, pupa and adult.

Get ready to be amazed by the hidden world of insect transformations. By learning about these stages, you can become a smarter farmer. You will understand how pests grow and develop,

allowing you to target them more effectively and protect your crops.

Materials

- Handouts with pictures and descriptions of the different developmental stages (egg, larva/nymph, pupa, adult) of common pest insects found in the local agroecosystem
- Magnifying glasses or hand lenses for each participant
- Observation trays or containers with lids
- Small brushes (optional)
- Tweezers (optional)
- Data sheets for recording observations (including location, type of insect, observed stage).

Procedure

1. **Introduction** (15 minutes):
    - Briefly discuss the concept of insect lifecycles and the importance of understanding them for effective pest control.
    - Introduce the term 'metamorphosis' and explain the different types (complete metamorphosis with egg, larva, pupa and adult stages; incomplete metamorphosis with egg, nymph and adult stages).
2. **Stages of transformation**: unveiling the metamorphosis (20 minutes):
    - Use handouts or pictures to showcase the different developmental stages (egg, larva/nymph, pupa, adult) of common pest insects relevant to the local crops.
    - Highlight the distinct physical characteristics and behaviours associated with each stage.
    - Discuss the vulnerability of different stages to control measures, emphasizing the importance of targeting specific stages for effective pest management.
    - Encourage participants to ask questions and share any prior experiences they have had with observing different insect life stages in their fields.
3. **Field detectives**: searching for stages (30 minutes):
    - Guide participants to different areas of the field, focusing on areas with potential pest problems.
    - Instruct them to become 'insect detectives', searching for signs of different developmental stages of pest insects on plants (e.g. egg clusters, feeding damage by larvae, pupae on leaves or stems).
    - Encourage participants to use magnifying glasses, brushes (if available) and tweezers (if available) to carefully examine plants and collect potential insect stages for closer observation.
    - Remind participants to handle the collected specimens gently to avoid harming them.
4. **Life stages under the lens**: close observation (30 minutes):
    - Instruct participants to transfer their collected specimens (i.e. eggs, larvae/nymphs, pupae) to observation trays for closer examination with magnifying glasses.
    - Encourage them to use the provided handouts or pictures to identify the observed stage and potentially the specific pest insect.
    - Facilitate a group discussion on their observations, prompting participants to share the type of insect stage they found, its location on the plant, and any potential challenges they faced during the search.

5. **Targeted strategies**: the power of knowing (20 minutes):
    - Discuss how knowledge of different developmental stages can inform pest control strategies, for example, targeting eggs with specific insecticides or using biological control agents that prey on specific larval stages.
    - Emphasize the importance of IPM that disrupts pest lifecycles and minimizes reliance on broad-spectrum insecticides.
6. **Wrap-up and action planning** (15 minutes):
    - Briefly summarize the importance of understanding the developmental stages of pest insects for effective management.
    - Encourage participants to continue observing insect lifecycles in their fields and use this knowledge to make informed decisions about pest control.
    - As an optional activity, participants can develop a simple action plan outlining specific strategies they can implement based on the observed insect stages (e.g. using insect traps to monitor adult populations, promoting beneficial predators during specific larval stages).

Additional tips

- Consider inviting an entomologist or agricultural extension worker to provide further insights into arthropod life cycles, identification of different stages and targeted pest control strategies.
- Depending on time constraints, the exercise can focus on a specific pest insect relevant to the participants' crops and showcase all its developmental stages.
- Encourage participants to document their observations with notes, sketches or pictures of the collected specimens for future reference and identification practice.
- Remind participants to be mindful of the potential fragility of certain stages (especially eggs) during collection and observation.

By participating in this interactive field exercise, farmers will gain valuable knowledge about the developmental stages of arthropods, particularly pest insects.

This newfound understanding can empower them to develop more targeted and sustainable pest control strategies in their fields.

Field exercise 4: *Unveiling nature's guardians: identifying beneficial insects*

Introduction

This field exercise for FFS focuses on developing skills in identifying beneficial insects commonly found in agricultural ecosystems. By recognizing these valuable allies, farmers can promote their populations and minimize reliance on chemical controls.

Materials

- Handouts with pictures and descriptions of common beneficial insects found in the local agroecosystem (e.g. ladybugs, lacewings, praying mantises, hoverflies, parasitic wasps)
- Field guides or insect identification keys for small groups
- Magnifying glasses or hand lenses for each participant
- Insect nets for small groups
- Observation trays or containers with lids
- Data sheets for recording observations (including insect counts).

Procedure

1. **Introduction** (15 minutes):
    - Briefly discuss the concept of IPM and the importance of promoting beneficial insects as natural enemies of pests.
2. **Meet the guardians**: **unveiling beneficials** (20 minutes):
    - Use handouts or pictures to showcase common beneficial insects found in the local agroecosystem.
    - Highlight the diverse range of beneficial insects and their specific ecological roles:
        - predators (e.g. ladybugs, lacewings, praying mantises) that feed on pest insects;
        - parasitoids (e.g. parasitic wasps) that lay eggs in pest insect bodies, eventually killing the host;
        - pollinators (e.g. bees, butterflies) that transfer pollen between plants, promoting fruit and vegetable production.
    - Discuss the physical characteristics and behaviours that can help distinguish beneficial insects from potential pests.
    - Encourage participants to ask questions and share any of their prior experiences with beneficial insects in their fields.
3. **Guardians on the hunt: field collection** (30 minutes):
    - Divide participants into small groups and distribute insect nets.
    - Guide them to different areas of the field, focusing on areas with flowering plants or diverse vegetation, which are likely to attract beneficial insects.
    - Instruct them to carefully capture insects using nets, emphasizing gentle handling to avoid harming the beneficial creatures.
4. **Unveiling identities: close observation** (30 minutes):
    - Instruct participants to transfer their collected insects into observation trays for closer examination with magnifying glasses.
    - Encourage them to use the provided handouts, field guides (if available), and their observations to identify the beneficial insects they collected.
    - Facilitate a group discussion on their observations, prompting participants to share the type of beneficial insect they found, its distinguishing features, and any potential challenges they faced during identification.
5. **Creating a haven for helpers** (20 minutes):
    - Discuss the importance of creating a habitat-friendly environment to attract and sustain beneficial insect populations; examples include providing flowering plants for food sources, avoiding broad-spectrum insecticides that can harm both pests and beneficial insects, and managing field margins to provide overwintering sites.
    - Encourage participants to brainstorm strategies they can implement in their own fields to promote these beneficial organisms.
6. **Wrap-up and Action Planning** (15 minutes):
    - Briefly summarize the importance of recognizing beneficial insects and their contribution to a healthy ecosystem.
    - Encourage participants to continue observing beneficial insects in their

fields and monitor their impact on pest populations.

- As an optional activity, participants can develop a simple action plan outlining specific strategies they can implement to promote beneficial insects in their farms (e.g. planting flowering borders, reducing insecticide use).

Additional tips

- Consider inviting an entomologist or agricultural extension worker to provide further insights into beneficial insect identification, their life cycles and strategies for enhancing their populations.
- Depending on time constraints, the exercise can focus on a specific group of beneficial insects relevant to the local crops (e.g. predators targeting a specific pest problem).
- Encourage participants to document their observations with notes, sketches, or pictures of the collected beneficial insects for future reference and identification practice.
- Remind participants to handle insects with care and release them back into the field after observation to maintain the natural balance in the ecosystem.

By participating in this engaging field exercise, farmers will gain valuable knowledge and develop skills for identifying beneficial insects.

This newfound awareness can empower them to adopt practices that promote these natural allies, leading to a more sustainable and balanced approach to pest control in their fields.

5.4 Insect zoo collection identification and preservation-based exercises

Field exercise 1: *Unveiling the tiny world: insect collection and preservation*

Introduction

Our farms are full of life, but some of the most important players might surprise you – they are tiny!

Insects play a huge role in a healthy farm. Some, like bees and ladybugs, help our crops grow; others clean up leftover plant matter. But how can we learn more about these mini-marvels?

Today, we will become insect detectives!

We will learn how to catch and preserve a few insects safely for a closer look and to understand them better.

This knowledge can help us attract and support these beneficial insects, leading to a healthier farm and potentially even higher yields!

Objectives

- Allow farmers to gain basic skills in identifying different insect groups.
- Allow farmers to learn how to collect and preserve insect specimens for further observation.
- Allow farmers to be able to distinguish between beneficial (good guys) and harmful insects (bad guys) in their fields.

Materials

- Insect nets for each participant or small group
- White trays or sheets (for collecting insects)
- Hand lenses or magnifying glasses
- Small vials or containers with lids for each participant
- Cotton balls or tissue paper
- Ethanol (70%); **warning**: it is a flammable liquid, so handle with care (or use rubbing alcohol)

- Labels and markers
- Handouts with pictures of common insect groups (beneficial and harmful) (optional)
- Field guides or identification keys for insects (optional).

Procedure

1. **Introduction** (15 minutes):
    - Briefly discuss the importance of insects in the ecosystem – their roles as pollinators, decomposers and part of the food chain.
    - Introduce the concept of beneficial insects that help control pests and contribute to healthy crops.
    - Explain the purpose of insect collection and preservation for further observation and identification.
2. **Insect diversity exploration** (20 minutes):
    - Divide participants into small groups and provide them with insect nets and white trays/sheets.
    - Guide them to different areas of the field, encouraging them to actively search for insects (avoiding disturbing beneficial insect habitats).
    - Instruct them to carefully capture insects using the nets and gently transfer them to the white trays for observation.
3. **Insect observation and identification** (30 minutes):
    - Distribute hand lenses or magnifying glasses for closer observation.
    - Use handouts or pictures to help participants identify different insect groups based on basic physical characteristics (e.g. wings, body segments).
    - Introduce the concept of beneficial insects (e.g. ladybugs, hoverflies) and harmful insects (e.g. aphids, leafhoppers).
    - Encourage participants to discuss the potential roles of the collected insects in the field ecosystem.
4. **Insect collection and preservation** (20 minutes):
    - **Safety reminder**: Emphasize the importance of handling insects carefully and avoiding contact with unknown species.
    - Demonstrate the proper technique for insect preservation:
        - Briefly explain the use of ethanol (or rubbing alcohol) as a preservative (note: ensure proper ventilation when using ethanol).
        - Show participants how to place a captured insect in a labelled vial containing a small amount of cotton ball or tissue paper.
    - Guide them to add enough ethanol to fully submerge the insect.
    - Instruct participants to label their vials with the date, location, and any observed characteristics of the insect.
5. **Group discussion and sharing** (20 minutes):
    - Bring everyone together and have each group share their insect collection and observations.
    - Discuss the different insect groups identified and their potential roles in the field.
    - Emphasize the importance of distinguishing beneficial insects from harmful ones for informed pest management decisions.

6. **Wrap-up** (15 minutes):
    - Briefly summarize the importance of insect diversity for a healthy agricultural ecosystem.
    - Reiterate the value of insect collection and preservation for further identification and learning.
    - Encourage participants to continue observing insects in their fields and consider using reference materials or extension services for more detailed identification.

Additional tips

- Consider inviting an entomologist or agricultural extension worker to provide further insights into insect identification, beneficial insect species and IPM strategies.
- Depending on time constraints, participants can use field guides or identification keys to attempt to identify their collected insects to a species level.
- Encourage participants to properly dispose of the used ethanol solution according to local regulations (note: do not pour ethanol down the drain).
- As an alternative to ethanol preservation, participants can air-dry larger insects on a paper towel for short-term observation purposes.

By participating in this interactive field exercise, farmers will gain basic skills in insect identification and collection techniques.

This newfound knowledge can empower them to recognize beneficial insects in their fields and promote practices that support a healthy insect community, ultimately contributing to a more sustainable agricultural system.

Field exercise 2: *Unveiling the night shift: sampling arthropods with light traps*

Introduction

Tonight, we will become insect detectives, exploring the fascinating world of nocturnal arthropods. These tiny creatures come out at night, and some of them might be helpful (friend/beneficial) or harmful (foe/pest) to your crops.

Objectives

- Allow farmers to understand the purpose of using light traps to sample arthropods.
- Allow farmers to be able to properly set up and operate a light trap.
- Allow farmers to gain experience in identifying different arthropod groups attracted to light traps.

Materials

- Light traps (battery-powered or solar-powered) for small groups)
- Spare batteries (if using battery-powered traps)
- Collection containers with lids (e.g. plastic cups or jars)
- A killing agent (optional, use with caution, consider freezing as an alternative); consult local regulations for proper disposal
- Hand lenses or magnifying glasses
- Forceps or tweezers
- White trays or sheets
- Flashlights
- Data sheets for recording observations (optional)

- Handouts with pictures of common light-attracted arthropods (beneficial and harmful) (optional).

Procedure

1. **Introduction** (15 minutes):
    - Briefly discuss the importance of arthropods in the agricultural ecosystem, including beneficial insects such as predators and pollinators.
    - Introduce the concept of light traps as a tool for sampling nocturnal arthropods attracted to light.
    - Explain how analysing the trapped arthropods can provide insights into pest populations, beneficial insect activity and overall field biodiversity.
2. **Light trap assembly and operation** (20 minutes):
    - Demonstrate the proper assembly and operation of the light traps (focusing on battery installation or solar panel positioning if applicable).
    - Emphasize the importance of following safety guidelines when handling electrical components (if using battery-powered traps).
    - Discuss considerations for placing light traps: a sheltered location away from wind and direct rain, which avoids disturbing beneficial insect habitats.
3. **Setting up light traps** (20 minutes):
    - Divide participants into small groups and provide them with light traps, collection containers and killing agent (if used).
    - Guide them to designated locations within the field suitable for light trap placement based on the discussed considerations.
    - Instruct them to set up the light traps according to the demonstration and ensure that they are functioning properly.
4. **Night collection and observation** (30 minutes):
    - After sufficient time for arthropods to be attracted to the light (ideally overnight), participants return to their designated traps.
    - Instruct them to carefully turn off the traps (if using battery-powered models) and use flashlights to observe the trapped arthropods.
    - Emphasize safe handling practices, especially if using a killing agent.
5. **Sorting and identification (**30 minutes):
    - Guide participants on how to carefully transfer the trapped arthropods from the light traps to collection containers.
    - Distribute hand lenses or magnifying glasses for closer observation on white trays or sheets:
        - Use handouts or pictures to help participants identify different arthropod groups based on basic physical characteristics.
        - Encourage discussion on the potential roles of the identified arthropods (i.e. beneficial insects, potential pests, decomposers).
        - Participants can use data sheets (if provided) to record their observations and the number of each arthropod group found.
6. **Group discussion and wrap-up** (20 minutes):
    - Bring everyone together and have each group share its collection results and observations.

- Discuss the diversity of arthropods attracted to light traps and their potential significance in the field ecosystem.
- Emphasize the importance of recognizing beneficial insects to promote their presence and encourage sustainable pest management practices.

Additional tips

- Consider inviting an entomologist or agricultural extension worker to provide further insights into light trap data interpretation, beneficial insect identification and IPM strategies.
- Depending on time constraints, participants can try to identify their collected arthropods to a species level using reference materials or identification keys.
- In using a killing agent, ensure proper disposal according to local regulations; freezing can be a safer alternative for short-term preservation-
- Encourage participants to continue monitoring their fields using light traps or other methods to track arthropod populations and adjust their pest management strategies accordingly.

By participating in this night-time field exercise, farmers will gain practical experience with light traps and develop basic skills in arthropod identification.

This newfound knowledge can empower them to make informed decisions about pest management, promote beneficial insect populations, and contribute to a more balanced and sustainable agricultural system.

Field exercise 3: *Unveiling the hidden world: sampling arthropods with sticky boards*

Introduction

Have you noticed some damage to your crops lately but cannot quite pinpoint the culprit? Tiny arthropods such as insects (e.g. aphids, whiteflies, mealy bugs) and mites could be the reason. To understand what's munching on your plants, we can use a handy tool called a sticky board.

Think of it like a fly trap for your field. These boards are covered with a special glue that insects get stuck on when they land or crawl across them. By placing them strategically around your farm, you can collect these little critters and identify them. This is important because not all arthropods are bad guys. Some, like ladybugs, actually help control pest populations by eating them.

By identifying the arthropods in your fields, you can figure out which ones are helpful and which ones might be harming your crops.

So, how exactly do sticky boards work? Let's dive in and find out.

Objectives

- Allow farmers to understand the purpose of using sticky boards to sample arthropods.
- Allow farmers to be able to properly place and collect sticky boards for effective sampling.
- Allow farmers to gain experience in identifying different arthropod groups captured on sticky boards.

Materials

- Sticky boards for small groups
- String or zip ties (for hanging)
- Stakes or poles (for hanging sticky boards)
- Pencils or markers
- Hand lenses or magnifying glasses
- Forceps or tweezers
- Data sheets for recording observations (optional)
- Handouts with pictures of common arthropods found on sticky boards (beneficial and harmful) (optional).

Procedure

1. **Introduction** (15 minutes):
    - Briefly discuss the importance of arthropods in the agricultural ecosystem, including beneficial insects like predators and pollinators.
    - Introduce the concept of sticky boards as a passive sampling tool for capturing flying arthropods that come into contact with the adhesive surface.
    - Explain how analysing the captured arthropods can provide insights into pest populations, beneficial insect activity and overall field biodiversity.
2. **Sticky board placement** (20 minutes):
    - Demonstrate the proper handling of sticky boards to avoid touching the adhesive surface.
    - Discuss ideal placement considerations for sticky boards:
        - a sheltered location away from direct sunlight and rain;
        - at appropriate heights depending on target arthropods (e.g. eye level for adult pests, lower for crawling insects);
        - multiple boards at different locations within the field for better representation.
    - Instruct participants on securely attaching the sticky boards to string or zip ties and hanging them from stakes or poles positioned at the chosen locations,
    - Encourage participants to label their sticky boards with the date and location for record-keeping.
3. **Board collection and observation** (20 minutes):
    - After a designated period (a few days to a week), participants return to their sticky boards.
    - Instruct them to carefully remove the boards from the hanging positions, minimizing contact with the adhesive surface.
    - Emphasize safe handling practices when observing captured arthropods.
4. **Sorting and identification** (30 minutes):
    - Guide participants in using pencils or markers to circle any captured arthropods on the sticky boards for easier counting and identification later.
    - Instruct them to carefully remove individual arthropods from the sticky board using forceps or tweezers, placing them in a clean container for closer observation.
    - Distribute hand lenses or magnifying glasses for detailed examination.
    - Use handouts or pictures to help participants identify different arthropod groups based on basic physical characteristics.
    - Encourage discussion on the potential roles of the identified arthropods (beneficial insects, potential pests, decomposers).

- Encourage participants to use data sheets to record their observations and the number of each arthropod group found on their boards.

5. **Group discussion and wrap-up** (20 minutes):
   - Bring everyone together and have each group share its collection results and observations.
   - Discuss the diversity of arthropods captured on sticky boards and their potential significance in the field ecosystem.
   - Emphasize the importance of recognizing beneficial insects to promote their presence and encourage sustainable pest management practices.

Additional tips

- Consider inviting an entomologist or agricultural extension worker to provide further insights into interpreting sticky board data, beneficial insect identification and IPM strategies.
- Depending on time constraints, participants can try to identify their collected arthropods to a species level using reference materials or identification keys.
- Encourage participants to continue monitoring their fields using sticky boards or other methods to track arthropod populations and adjust their pest management strategies accordingly.
- Sticky boards can be reused after carefully removing captured arthropods and dust/ debris from the adhesive surface with a light touch using a solvent (consult safety guidelines) or a rolled piece of clear tape.

By participating in this field exercise, farmers will gain practical experience with sticky boards and develop basic skills in arthropod identification. This newfound knowledge can empower them to make informed decisions about pest management, promote beneficial insect populations, and contribute to a more balanced and sustainable agricultural system.

Field exercise 5: *Unveiling the bug brigade: functional classification of insects*

Introduction

Insects are everywhere in our farms! But are they helpful or harmful to our crops?

In this fun and interactive exercise, we'll be turning ourselves into insect detectives!

We will learn how to classify insects based on their job in the ecosystem. Are they beneficial insects like ladybugs that help control pests, or are they sneaky crop-munching pests like grasshoppers and leafhoppers?

We will also explore the fascinating world of decomposers, like dung beetles, which help break down waste and keep our soil healthy. So let's explore.

Objectives

- Allow farmers to gain an understanding of the diverse roles' insects play in the agricultural ecosystem
- Allow farmers to be able to classify insects based on their function (beneficial, pest, decomposer).
- Allow farmers to develop skills in observing insect behaviour and identifying basic physical characteristics.

Materials

- Magnifying glasses or hand lenses for each participant
- Observation trays or containers
- Coloured markers

- Handouts with pictures of common insects found in the agroecosystem (classified by function) (optional)
- Field guides or insect identification keys (optional).

Procedure

1. **Introduction** (15 minutes):
    - Briefly discuss the vast diversity of insects in the agricultural ecosystem.
    - Introduce the concept of functional classification (i.e. grouping insects based on their ecological role, such as beneficial insects, pests, decomposers and pollinators).
    - Explain the importance of recognizing these different functional groups for informed decision-making in pest management and promoting a healthy agricultural environment.
2. **Insect roles and observation techniques** (20 minutes):
    - Divide participants into small groups and distribute magnifying glasses or hand lenses
    - Discuss the different functional groups of insects:
        - Beneficial insects: predators (ladybugs, lacewings), parasitoids (wasps), pollinators (bees, butterflies);
        - Pests: leafhoppers, aphids, beetles, caterpillars;
        - Decomposers: dung beetles, earthworms (though not strictly insects).
    - Use handouts or pictures to showcase examples of each functional group and their distinguishing physical characteristics (wings, mouthparts).
    - Emphasize the importance of observing insect behaviour for clues about their function (e.g. feeding on plants, flying from flower to flower).
3. **Observation of insects in the field** (30 minutes):
    - Guide participants to different areas of the field, encouraging them to actively search for insects while observing their behaviour and physical features.
    - Instruct them in carefully capturing insects using nets (if available) or gently coax them onto observation trays for closer examination with magnifying glasses.
    - Encourage participants to discuss their observations and use coloured markers to circle any distinguishing characteristics they notice.
4. **Functional classification and discussion** (30 minutes):
    - Bring everyone together and have each group share its captured insects or observations.
    - Facilitate a discussion on the potential function of each observed insect based on their physical characteristics and behaviour.
    - Use field guides or identification keys (if available) to assist with more detailed identification.
    - Emphasize the importance of recognizing beneficial insects and promoting their presence in the field for natural pest control.
5. **Wrap-up and action planning** (15 minutes):
    - Briefly summarize the importance of understanding insect functional classification for sustainable pest management.

- Encourage participants to continue observing insects in their fields and consider incorporating practices that attract and support beneficial insect populations.
- As an optional activity, participants can brainstorm and develop a simple action plan outlining strategies they can implement to promote beneficial insects in their specific agricultural context.

Additional tips

- Consider inviting an entomologist or agricultural extension worker to provide further insights into insect identification, beneficial insect strategies and IPM approaches.
- Depending on time constraints, participants can focus on a specific functional group (e.g. beneficial insects) and learn about different species within that group.
- Encourage participants to document their insect observations, including pictures or sketches, for future reference and identification practice.
- Remind participants to handle insects carefully and avoid harming beneficial species. Release any captured insects back into the field after observation.

By participating in this interactive field exercise, farmers will gain valuable knowledge about the diverse roles insects play in their agricultural ecosystem.

This newfound understanding can empower them to make informed decisions about pest management, promote a more balanced insect community, and ultimately contribute to a more sustainable agricultural system.

Field exercise 6: *Unveiling the natural defenders: exploring predatory insects*

Introduction

Have you ever noticed how some of your crops seem to shrug off pest attacks, while others get devastated. The secret might lie in a hidden army of beneficial insects working tirelessly to protect your harvest.

Today, we are transforming ourselves into insect detectives. This exciting field exercise will introduce you to the fascinating world of predatory insects. Think of them as the farm's very own superheroes! These tiny hunters actively seek out and devour other insects, including the very pests that threaten your crops.

By learning to identify and support these natural defenders, you can create a more balanced ecosystem in your fields, leading to a healthier harvest and a more sustainable farming practice.

Let's get started and discover the power of your very own bug bodyguards!

Objectives

- Allow farmers to gain an understanding of the importance of predatory insects in natural pest control.
- Allow farmers to be able to identify common predatory insects found in their fields.
- Allow farmers to develop skills in observing predatory insect behaviour and their beneficial impact on pest populations.

Materials

- Insect nets for each participant or small group

- Observation trays or containers with lids
- Magnifying glasses or hand lenses for each participant
- Reference sheets or pictures of common predatory insects in the local agroecosystem (optional)
- Field guides or insect identification keys (optional)
- Data sheets for recording observations (optional).

Procedure

1. **Introduction** (15 minutes):
   - Briefly discuss the concept of natural pest control and the role of beneficial insects in suppressing pest populations.
   - Introduce the concept of predatory insects (i.e. insects that actively hunt and feed on other insects, such as many agricultural pests).
   - Explain the importance of recognizing and promoting predatory insect populations for a healthy and sustainable farm ecosystem.
2. **Predatory insect gallery** (20 minutes):
   - Showcase reference sheets or pictures of common predatory insects found in the local agroecosystem.
   - Discuss the diverse range of predatory insects, including ladybugs, lacewings, praying mantises and assassin bugs.
   - Highlight their distinguishing physical characteristics (e.g. sharp mouthparts, grasping legs) and their preferred prey (aphids, caterpillars).
   - Encourage participants to ask questions and share any prior experiences they have had with predatory insects in their fields.
3. **Hunting for heroes: field observation** (30 minutes):
   - Divide participants into small groups and distribute insect nets, observation trays with lids, and magnifying glasses.
   - Guide them to different areas of the field, encouraging them to actively search for insects while focusing on observing behaviour.
   - Instruct them to carefully capture potential predatory insects using nets and gently transfer them to observation trays for closer examination with magnifying glasses.
   - Remind participants to handle insects carefully and avoid harming them.
4. **Predator or prey? Identification and discussion** (30 minutes):
   - Bring everyone together and have each group share its captured insects.
   - Facilitate a discussion on the observed insect's physical characteristics and behaviour.
   - Use reference sheets, pictures or field guides (if available) to help participants identify their captured insects as potential predators or other beneficial insects.
   - Discuss the potential impact of these predators on pest populations in the field.
   - Encourage participants to use data sheets (if provided) to record their observations and the species of predatory insects they encountered.
5. **Habitat heroes: promoting predators** (20 minutes):
   - Discuss the importance of creating a habitat-friendly environment to attract and sustain predatory insect populations; examples include providing diverse

flowering plants for food and shelter, avoiding unnecessary insecticide use, and creating overwintering sites (leaf litter piles).

- Encourage participants to brainstorm strategies they can implement in their own fields to promote these beneficial insects.

6. **Wrap-up and action planning** (15 minutes):
   - Briefly summarize the importance of predatory insects for natural pest control and a balanced agroecosystem.
   - Encourage participants to continue observing predatory insects in their fields and monitor their impact on pest populations.
   - As an optional activity, participants can develop a simple action plan outlining specific strategies they can implement to promote predatory insect populations in their farms.

Additional tips

- Consider inviting an entomologist or agricultural extension worker to provide further insights into predatory insect identification, their life cycles, and strategies for enhancing their populations.
- Depending on time constraints, participants can focus on a specific predatory insect group (e.g. ladybugs) and learn about its different species and preferred prey.
- Encourage participants to document their captured insects through pictures or sketches for future reference and identification practice.
- Emphasize the importance of releasing any captured insects back into the field after observation to maintain the natural predator-prey balance.

By participating in this engaging field exercise, farmers will gain valuable knowledge about the importance and diversity of predatory insects.

This newfound understanding can empower them to adopt practices that promote these natural defenders in their fields, contributing to a more sustainable and balanced agricultural ecosystem with a reduced reliance on chemical pest control.

Field exercise 7: *Unveiling the hidden helpers: parasites and parasitoids*

Introduction

This field exercise dives into the fascinating world of parasites and parasitoids, two organisms with surprisingly different impacts on your crops.

We will learn to distinguish between these often-confused terms. Parasites can weaken your plants, reducing yield, while parasitoids act as natural pest control agents.

By learning to identify signs of parasitism and the telltale marks left by parasitoids, you can gain valuable insights into the health of your crops and the hidden helpers working behind the scenes.

Ready to become a detective and discover who is 'friend' and who is 'foe' in your fields. Let's get started!

Objectives

- Allow farmers to gain an understanding of the difference between parasites and parasitoids.
- Allow farmers to be able to identify the beneficial role of parasitoids in natural pest control.
- Allow farmers to develop skills in observing signs of parasitism in their fields.

Materials

- Handouts with pictures and descriptions of common parasites and parasitoids relevant to local crops (optional)
- Field guides or insect identification keys (optional)
- Magnifying glasses or hand lenses for each participant
- Observation trays or containers with lids
- Scissors or tweezers (optional)
- Data sheets for recording observations (optional).

Procedure

1. **Introduction** (15 minutes):
    - Briefly discuss the concept of pest control and the importance of exploring alternative strategies.
    - Introduce the terms 'parasite' and 'parasitoid', highlighting the key difference:
        - **Parasite**: an organism that lives on or within another organism (host) and benefits at the host's expense;
        - **Parasitoid**: an insect that lays its eggs inside the body of another insect (host), eventually killing the host as its offspring develop.
    - Emphasize the beneficial role of parasitoids in naturally suppressing pest populations in the field.
2. **Parasites vs. parasitoids: unveiling the difference** (20 minutes):
    - Use handouts or pictures to showcase examples of common parasites and parasitoids relevant to the local crops.
    - Highlight the diverse range of these organisms and their specific host-parasite/parasitoid relationships.
    - Discuss the impact of parasites on their hosts (e.g. weakened plants, reduced yield) and the positive effect of parasitoids on pest control.
    - Encourage participants to ask questions and share any prior experiences they have had with these organisms in their fields.
3. **Signs of parasitism: field observation** (30 minutes):
    - Guide participants to different areas of the field, focusing on areas with potential pest problems.
    - Instruct them to observe the crop plants carefully, looking for signs of damage that might indicate insect pests (e.g. leaf chewing, stunted growth).
    - Encourage them to use magnifying glasses to examine leaves and stems for any unusual structures or discolorations that might be signs of parasitism (e.g. parasitic eggs, cocoons).
    - If available, participants can carefully collect a few damaged plant samples using scissors or tweezers for closer observation.
4. **Hidden heroes revealed: discussion and identification** (30 minutes):
    - Bring everyone together and have each participant share their observations from the field.
    - Facilitate a discussion on the observed signs of damage and potential presence of parasites or parasitoids.
    - Use field guides or identification keys (if available) to help participants identify any parasites or parasitoids they might have encountered.
    - Encourage participants to use data sheets (if provided) to record their

observations and document any potential signs of parasitism.

5. **Conserving the good guys: supporting parasitoids** (20 minutes):
    - Discuss the importance of creating a habitat-friendly environment to attract and sustain parasitoid populations.
    - Examples include providing flowering plants for food sources, avoiding broad-spectrum insecticides that can harm both pests and parasitoids, and managing field margins to provide overwintering sites.
    - Encourage participants to brainstorm strategies they can implement in their own fields to promote these beneficial organisms.
6. **Wrap-up and action planning** (15 minutes):
    - Briefly summarize the importance of parasitoids as natural enemies of pests in a sustainable agricultural system.
    - Encourage participants to continue observing signs of parasitism in their fields and monitor their impact on pest populations.
    - As an optional activity, participants can develop a simple action plan outlining specific strategies they can implement to promote parasitoids in their farms.

Additional tips

- Consider inviting an entomologist or agricultural extension worker to provide further insights into parasitoid identification, their life cycles and strategies for enhancing their populations.
- Depending on time constraints, participants can focus on a specific pest-parasitoid relationship relevant to their local crops.
- Encourage participants to document their observations, including pictures of damaged plant parts and any potential signs of parasitism, for future reference.
- Remind participants to handle plant samples carefully and dispose of them properly after observation to avoid spreading potential diseases.

By participating in this field exercise, farmers will gain valuable knowledge about the roles of parasites and parasitoids in the agricultural ecosystem.

This newfound understanding can empower them to adopt practices that promote these beneficial organisms and contribute to a more sustainable and balanced approach to pest control.

Field exercise 8: *Suit up, stay safe and avoid direct exposure to pesticides*

Introduction

This field exercise for FFS participants focuses on the importance of personal protective equipment (PPE) and safe handling practices to minimize exposure to pesticides.

Materials

- Different types of PPE commonly used for pesticide application (coveralls, gloves, goggles, respirators, boots) in various sizes (ensure a proper fit)
- A spray bottle or sprayer (empty)
- Pesticide labels (sample with a focus on PPE requirements)
- Signage or markers for demonstrating safe work zones
- Data sheets for recording observations (optional).

Procedure

1. **Introduction** (15 minutes):
    - Briefly discuss the importance of pesticides in pest control while acknowledging the potential health risks associated with direct exposure.
    - Introduce the concept of PPE as a crucial line of defence for farmers when handling pesticides.
2. **Know your armour: exploring PPE** (20 minutes):
    - Showcase different types of PPE commonly used for pesticide application, explaining the function of each piece (coveralls for skin protection, gloves for hand protection, goggles for eye protection, respirators for respiratory protection, boots for foot protection).
    - Emphasize the importance of proper fit for each PPE item – demonstrate how to adjust straps and ensure a snug fit for optimal protection.
    - Encourage participants to try on different PPE items and discuss the importance of comfort while ensuring safety.
3. **Reading the label: understanding PPE requirements** (20 minutes):
    - Introduce a sample pesticide label and guide participants to locate the section on PPE requirements.
    - Discuss the specific types of PPE mandated by the label for the safe application of that particular pesticide.
    - Emphasize the importance of always following the specific instructions and safety precautions outlined on the pesticide label.
4. **Safety first: simulating safe application** (30 minutes):
    - Set up a designated area to simulate a pesticide application scenario.
    - Divide participants into small groups and have them take turns dressing in the appropriate PPE based on the sample pesticide label.
    - Guide them through a safe application demonstration using the empty sprayer, highlighting key practices:
        - mixing pesticides in a designated area away from people and animals;
        - maintaining a safe distance from others while spraying;
        - avoiding contact with sprayed surfaces while the application is wet; and
        - encourage participants to ask questions and discuss any challenges they might face while wearing PPE during actual application.
5. **Marking your territory: safe work zones** (20 minutes):
    - Discuss the importance of establishing safe work zones during pesticide application to protect bystanders and the environment.
    - Demonstrate how to use signage or markers to clearly define the application area and keep people and animals out.
    - Encourage participants to brainstorm strategies for implementing safe work zones in their own fields.
6. Wrap-up and action planning (15 minutes):
    - Briefly summarize the key takeaways on the importance of PPE and safe handling

practices to avoid direct exposure to pesticides.

- Encourage participants to conduct a self-assessment of their current PPE practices and identify areas for improvement.
- As an optional activity, participants can develop an action plan outlining steps they will take to ensure that they have the proper PPE and knowledge for safe pesticide application in their fields.

Additional tips

- Consider inviting a safety officer or agricultural extension worker to provide further insights into proper PPE use, safe handling procedures, and potential health risks associated with pesticide exposure.
- Depending on time constraints, the exercise can focus on a specific type of pesticide application relevant to the participants' crops.
- Encourage participants to share their experiences with pesticide application and discuss any challenges they face regarding PPE use.
- Remind participants that this exercise is a simulation and that they should never handle actual pesticides without proper training and following all safety precautions outlined on the specific product label.

By participating in this interactive field exercise, farmers will gain valuable knowledge and practical skills regarding PPE and safe handling practices when working with pesticides.

This newfound awareness can empower them to protect their health and create a safer working environment while managing pests in their fields.

CHAPTER 6

Monitoring and evaluation in Farmer Field School

6.1 Let's track our progress: monitoring and evaluation in Farmer Field Schools

As we work together in the FFS, it is important to keep an eye on how things are going. This helps us see if our ideas are working and make adjustments along the way.

Here is how we can achieve this:

- Tracking from the start: Remember all the problems we identified during our discussions? We will keep a record of them starting here, which will helps us measure our progress later.
- Checking in regularly: We will all work together to observe what is happening in the field and during our sessions. Think of it like being detectives – but for farming.
- Learning together: By sharing what we see, we can learn from each other and make improvements; if something is not working as planned, we can discuss why and adjust our approach.
- Building on our plans: The goals we set together during our planning will guide how we track our progress; this helps us stay focused on what we want to achieve.

By working together to monitor and evaluate our FFS, we can ensure that it's a valuable learning experience for everyone.

Measuring success: what to look for in FFS

1. **Farmers' skills and knowledge**: Do farmers seem to be learning new things and improving their skills?
2. **Using new technologies**: Are farmers adopting new practices and technologies they learned in the FFS?
3. **Increased production**: Are farmers seeing higher yields or better livestock production?
4. **More income**: Are farmers earning more money from their farms?
5. **Improved lives**: Are farmers' lives improving in other ways, such as better nutrition or social status?
6. **Sharing the knowledge**: Are farmers sharing what they've learned with others in the community?
7. **Better extension services**: Are farmers sharing what they've learned with others in the community?

Source: Based on: Groeneweg, K., Minjauw, B., Buyu, G. & Sones, K.R. 2006. *Guidelines for Participatory Monitoring and Evaluation of FFS*. Rome: FAO.

6.1.1 Making the most of FFS: tracking progress and learning

This section explains how we will track how well the FFS is going and use this information to learn and improve. Think of it as checking the compass on a trip — it helps us see if we are on the right track and make adjustments if needed.

Why we track progress — MEL

Reasons for tracking progress in the FFS:

- To see if we are reaching our goals: This helps us know if the things we are trying are working and if we need to change anything.
- To show results to others: This can be helpful for people who support the FFS, like donors or government agencies.

- To be transparent: By tracking progress openly, everyone involved can see how things are going.

Here is a handy tool to remember the key questions for MEL:

1. **Why?** Why are we doing this?
2. **What?** What do we need to track?
3. **Who?** Who will be involved?
4. **Where?** Where will we track progress (in the field, during meetings)?
5. **When?** When will we start and stop tracking?
6. **With what?** What resources do we need (materials, time)?
7. **How?** How will we track progress (participatory methods and tools)?

The main goal of MEL in FFS is to learn and improve!

Every FFS will have its own specific goals, but some common ones are:

- Improve crop yields or livestock production.
- Reduce pest and disease problems.
- Improve soil health.
- Increase farmer income.

Who is involved?

Everyone in the FFS plays a part in tracking progress! The facilitator will guide the process, but the farmers are the key players. We may also involve other participants such as government officials or neighbouring farmers to share their perspectives.

When and where?

Tracking progress is not a one-time thing – it is something we do throughout the FFS. We will start by collecting information before the FFS even begins, so we have a baseline to compare to later. Then, we will continue to track progress during meetings and field visits. The specific location and intensity of tracking will depend on what information we need and how much time we have.

What resources do we need?

The resources we need for tracking progress are mostly included in the FFS programme; these include materials for data collection and time for discussions.

How do we track progress?

We will use the same participatory methods and tools we used for planning the FFS.

These might include group discussions, field observations and simple record-keeping. By working together to track progress, we can make sure that the FFS is a valuable learning experience for everyone involved.

6.1.2 Checking in during Farmer Field School sessions

Every FFS session is a chance to see how things are going and adjust if needed. Here is why it is important:

- **To stay on track**: By checking in, we can see if we're making progress towards our goals and make changes if we're not.
- **To boost confidence**: Seeing progress helps everyone feel good about their work and be motivated to keep going.
- **To learn and improve**: By discussing what is working and what is not, we can learn from each other and make the next session even better.
- **To catch problems early**: The sooner we identify any issues, the easier it is to fix them.

Here are some ways to check in during FFS sessions:

- **Group discussion**: Talk about what everyone has learned or observed since the last session.

- **Field visits**: Take a look at your fields together as a group to see how things are growing.
- **Review of activities**: Discuss how the planned activities went and if any adjustments are needed.

By checking in regularly, we can ensure that each FFS session is a valuable learning experience for everyone involved.

6.1.3 Monitoring and evaluating field comparative experiments

Experiments are a great way to learn by doing in FFS! They help us develop skills in observing, analysing and making decisions. By tracking the results of our experiments, we can learn what works best for our farms.

Here is why experiments are important:

- **To sharpen skills**: Experiments help us get better at observing, thinking critically, and making informed choices.
- **To make better decisions**: By tracking results, we can see what works best for our specific crops and conditions.

For example, let's say we are trying out three different fertilizers on our crop. Here are some things we might track:

- how much the crop yields;
- how fast the crop grows;
- how resistant the crop is to pests and diseases;
- how much labour each fertilizer requires;
- the cost of each fertilizer;
- our overall profit after considering costs and yields.

Keeping track

- To keep track of everything, we will use two tools:
    - The AESA sheet: This sheet helps us record all our observations and data from the experiment.
    - Member notebooks: Each participant can keep a notebook to record their own observations and thoughts.

We will use these tools to track our progress throughout the experiment, especially during the AESA sessions.

By working together and tracking our experiments carefully, we can all learn valuable lessons that will help us improve our farms!

Some key monitoring tools used in FFS

FFS rely on a strong monitoring and evaluation (M&E) system to track progress, assess impact, and improve the programme overall. Here are some key tools used in FFS M&E:

1. **Field observation records**:
    - **Description**: Facilitators or researchers visit participating farms regularly and document their observations in detailed field notes.
    - **Data collected**: Notes might include changes in agricultural practices adopted by farmers (e.g. planting techniques, pest management strategies), crop health and growth, group dynamics among participants, and any challenges or successes encountered.
    - **Benefits**: An M&E system provides real-time data on programme implementation, allowing for early identification of issues or areas needing adjustments.
2. **Participant journals**:
    - **Description**: Farmers participating in the FFS programme keep journals to record their observations, learning and experiences throughout the FFS programme.

- **Data collected**: Journals may include notes on demonstrations, discussions, trials conducted on their farms, personal insights and reflections on new knowledge gained.
- **Benefits**: Journals promote self-learning and reflection among farmers and provide valuable data on how participants understand and apply the programme content.

3. **Group and focus group discussions**:
   - **Description**: Facilitators can lead group discussions with all participants or conduct focused discussions with smaller groups.
   - **Data collected**: Discussions allow for an open exchange of information, experiences and challenges faced by farmers; they can reveal areas where participants need further clarification, identify best practices emerging within the group, and gauge overall programme satisfaction.
   - **Benefits**: Group and focus group discussions provide rich qualitative data on participant perspectives and foster collaboration and knowledge sharing among farmers.
4. **Pre- and post-tests**:
   - **Description**: Short knowledge-based tests are administered to participants before and after the FFS programme.
   - **Data collected**: Tests typically focus on key agricultural concepts covered in the programme curriculum; comparing pre-test and post-test scores can indicate improvement in participants' knowledge and understanding.
   - **Benefits**: These tests provide quantifiable data on knowledge gain and help assess the effectiveness of the programme in delivering key lessons learned.
5. **Cost-benefit analysis**:
   - **Description**: This analysis involves recording the costs associated with running the FFS programme (e.g. materials, facilitators' time, transportation) together with the observed benefits (e.g. increased crop yields, improved soil health, cost savings due to reduced pesticide use).
   - **Data collected**: The analysis yields financial data on programme expenses and potential economic benefits experienced by farmers.
   - **Benefits**: The analysis help assess the overall efficiency and economic impact of the FFS programme, and demonstrates the return on investment.

Additional considerations

- **MEL**: Encouraging FFS participants to be involved in data collection through farmer-led observations and discussions, and even adapting some record-keeping tools to their literacy levels can increase their ownership of the programme and improve the quality of information gathered.
- **Adapting tools for the local context**: The specific tools used and the data collected will vary depending on the programme's goals, the resources available and the literacy levels of the participating farmers.

Remember, the goal of monitoring in FFS goes beyond simply measuring success: it allows to gather information to identify areas for improvement; adapt the programme to local needs; and ensure that it's effectively empowering farmers with the knowledge and skills they need for sustainable agricultural

practices. See example of indicators in Tables 9 and 10

Key evaluation tools and their functionalities

Building on the tools used for monitoring, FFS utilize several evaluation tools to assess the programme's impact and effectiveness, as follows:

1. Data analysis tools
    - **Simple statistical analysis**: Once data are collected through monitoring tools, basic statistical analysis helps interpret the information and identify trends. This can involve calculating averages, percentages and comparisons:
        - for example, analysing pre-test and post-test scores can reveal the average increase in participants' knowledge;
        - comparing field observation records might show a percentage increase in farms adopting a specific recommended practice.

Table 9. Example of indicators for monitoring crop experiments in Farmer Field Schools

Parameter	Indicators
Nutrient supply/soil fertility	Crop deficiency symptoms (e.g. yellowing leaves, stunted growth) Crop growth/yields Weed density
Water supply to the crop	Soil moisture level Surface crusting or sealing Crop wilting Rooting depth
Crop growth/yield	Crop height Vigor Number of leaves Female flowers Number and size of fruits, cobs, length of panicles Crop yields
Pests and Diseases	Incidence of pests and diseases Presence of natural enemies

Source: van den Berg, H., Phillips, S. & Morales-Abubakar, A.L.C. 2023. *Monitoring, evaluation and learning in farmer field school programmes – A framework and toolkit*. Rome, FAO. https://doi.org/10.4060/cc5160en

Ministry of Agriculture, Forestry and Food Security (MAFFS) Smallholder Commercialization Programme (SCP) Global Agriculture and Food Security Programme (GAFSP), 2013. Manual: Farmer field school for Extension Workers. Prepared by Walter de Oliveira (FAO Sierra Leone) and Dragan Terzic (FFS Expert) with contribution from the Agricultural Extension Division of the Ministry of Agriculture, Forestry and Food Security of Sierra Leone. Rome, FAO.

- **Thematic analysis**: Qualitative data gathered through group discussions and participant journals can be analysed thematically. This involves identifying recurring themes, challenges and areas of success mentioned by participants by analysing themes, evaluators can understand the overall programme experience from the participants' perspective and identify areas where the programme might need adjustments

2. **Reporting tools:**
   - **Narrative reports**: These reports summarize the key findings, observations and lessons learned from the FFS programme. They typically include data analysis (both quantitative and qualitative), discussions on challenges encountered and successes achieved, and recommendations for improvement. Narrative reports are essential for communicating the programme's impact

Table 10. Example of frequency for monitoring crop-based trials

Parameter	Indicators
At start of the experiment	Prior land use Soil type Salinity Land area Date of planting Germination rate
Periodically (through AESA)	Nutrient deficiency signs Weeds
Frequently (through AESA)	Rainfall Plant growth Pest and disease Soil moisture Moisture stress Management practices carried out Labour input
At end of experiment	Plant weight/yield Soil nutritional level Total labor input Cost/benefit analysis

Source: van den Berg, H., Phillips, S. & Morales-Abubakar, A.L.C. 2023. *Monitoring, evaluation and learning in farmer field school programmes – A framework and toolkit*. Rome, FAO. https://doi.org/10.4060/cc5160en

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to stakeholders, including donors, policymakers and other FFS facilitators

- **Visual aids**: Charts, graphs and photos can be powerful tools to present data effectively in reports or presentations. Visual aids can make complex data more easily understandable and highlight key programme achievements. For example, using a bar chart to show the increase in crop yields from pre-FFS to post-FFS can visually demonstrate the programme's impact on agricultural productivity.

Additional considerations

- **Focus on learning**: Evaluation in FFS is not just about measuring success, but also about using the findings to improve the programme for future cycles. By analysing data and participant feedback, evaluators can identify areas where the programme can be strengthened, ensuring its continued effectiveness.
- **Participatory evaluation**: Involving FFS participants in the evaluation process can be beneficial. This might involve asking them to review and provide feedback on draft reports or presentations, or even involving them in data collection and analysis (adapted to their literacy levels).

Remember

The choice of specific evaluation tools will depend on the programme's goals, the resources available and the expertise of the evaluators. By effectively utilizing these tools, FFS programmes can gain valuable insights into their impact, identify areas for improvement, and ensure that they're delivering the best possible learning experience for participating farmers.

ANNEX 1

The qualities of a good facilitator in Farmer Field Schools

1. **Knowledgeable**: A good facilitator should have expertise in the subject matter being taught in the Farmer Field School (FFS), such as agricultural practices, pest management or sustainable farming techniques. He or she should also have a good understanding of the local context and farming conditions.
2. **Communication skills**: Effective communication is essential for a facilitator to convey information clearly and engage participants. The facilitator should be able to explain concepts in a way that is easy to understand and should encourage open dialogue among participants.
3. **Listening skills**: A good facilitator listens attentively to participants' questions, concerns and ideas. He or she should be able to understand and empathize with participants' perspectives, fostering a supportive learning environment.
4. **Adaptability**: Facilitators should be flexible and adaptable to meet the diverse needs of participants. They should be able to adjust their methods, pace and content based on the group dynamics, participants' learning styles, and any unforeseen challenges that may arise.
5. **Facilitation skills**: Facilitators should possess facilitation techniques to manage group discussions, stimulate participation, and keep the learning process on track. They should be skilled in asking probing questions, facilitating group activities, and managing conflicts constructively.
6. **Patience**: Patience is crucial for a facilitator, especially when working with diverse groups of participants who may have varying levels of understanding or experience. Facilitators should be patient in answering questions, addressing concerns, and guiding participants through the learning process.
7. **Empathy**: A good facilitator demonstrates empathy towards participants in facing their challenges and struggles. He or she should be able to relate to participants' experiences and provide support and encouragement when needed.
8. **Respectful**: Respect towards all participants, regardless of their background or knowledge level, is essential. A facilitator should create an inclusive and respectful environment where everyone feels valued and heard.
9. **Observant**: A good facilitator is a keen observer, able to recognize participants' needs and reactions and group dynamics. He or she uses observation to tailor their approach and ensure that everyone is engaged and understood.
10. **Availability**: Facilitators should be accessible and responsive to participants' needs, both during and outside of scheduled sessions. They make themselves available for questions, clarifications, and additional support.
11. **Humility**: A good facilitator is humble, acknowledging their own limitations and learning from participants' experiences and knowledge. He or she creates a collaborative learning environment where everyone's contributions are valued.
12. **Initiative**: Facilitators take initiative in guiding discussions, proposing activities, and addressing challenges. They proactively seek opportunities to enhance learning and engagement.
13. **Creativity**: Facilitators employ creative methods and approaches to make learning interesting and effective. They use innovative techniques to convey information and stimulate participation.

14. **Tolerance**: A good facilitator is tolerant of diverse perspectives, allowing for open discussion and constructive debate. He or she creates a safe space where participants feel comfortable expressing their ideas.
15. **Flexibility**: Facilitators adapt to changes in the environment or circumstances, adjusting their plans and approaches as needed to meet the group's needs.
16. **Transparency**: Facilitators are transparent in their communication and decision-making processes, ensuring that participants understand the objectives, expectations and rationale behind activities.
17. **Commitment**: Good facilitators are committed to the success of the FFS and the participants' learning; they demonstrate dedication and perseverance in guiding the group towards its goals.
18. **Accessibility**: Facilitators are approachable and accessible to all participants, fostering an open-door policy for questions, feedback and support.
19. **Sociable**: Facilitators are sociable and build positive relationships with participants, creating a sense of camaraderie and trust within the group.
20. **Confidant**: A good facilitator is someone whom participants can confide in, seeking advice, guidance and support when needed.
21. **Advisory**: Facilitators provide valuable advice and guidance to participants, helping them make informed decisions and solve problems effectively.
22. **Presentable**: Facilitators present themselves professionally, maintaining a neat and professional appearance that commands respect.
23. **Good collaborator**: Facilitators collaborate effectively with partners, stakeholders and external facilitators to enhance the learning experience and access additional resources.
24. **Fluency in local language**: Knowledge of the local language allows facilitators to communicate effectively with participants, ensuring clear understanding and engagement.
25. **Sensitivity**: Facilitators are sensitive to cultural norms and traditions, adapting their approach accordingly to respect participants' backgrounds.
26. **Knowledge of the environment**: Understanding the local environment, including agricultural practices, resources and challenges, enables facilitators to tailor their approach to fit the local context.
27. **Delegation skills**: Facilitators delegate tasks and responsibilities to participants, empowering them to take ownership of their learning and contribute to the group's success.
28. **Transparency**: Facilitators are transparent about constraints, challenges and limitations, fostering trust and honesty within the group.
29. **Timely explanations**: Facilitators provide explanations in a timely manner, ensuring that participants understand instructions, concepts and expectations.
30. **Effort**: Good facilitators go above and beyond, putting in extra effort to ensure the success of the FFS and the participants' learning journey.
31. **Methodological mastery**: Facilitators have a good mastery of the methodological approach used in the FFS, ensuring effective implementation and learning outcomes.
32. **Consideration**: Facilitators are considerate and forthcoming, taking into account participants' needs, preferences and feedback.

33. **Respect for autonomy**: Facilitators respect participants' autonomy and preferences, avoiding imposing their own agendas or plans.
34. **Group-centred approach**: Facilitators prioritize the group's needs and dynamics, adapting their actions and decisions accordingly.
35. **Advance preparation**: Facilitators explain situations in advance, providing participants with the necessary information to prepare for activities or discussions.
36. **Technical competence**: A good facilitator has technical competence or a good mastery of the subject being debated, ensuring credibility and effectiveness in facilitating and guiding participants.

Overall, a good facilitator in FFS possesses a combination of knowledge, communication skills, empathy, adaptability, patience and leadership qualities. He or she creates a supportive learning environment, foster active participation, and empower participants to achieve their learning goals and improve their farming practices.

ANNEX 2

The principles of facilitation in Farmer Field Schools

To effectively facilitate a Farmer Field School (FFS), facilitators must adhere to specific principles that cater to the needs of adult learners in agricultural contexts, as follows:

1. **Participation**: In FFS, active participation of farmers is essential for successful learning. Facilitators encourage farmers to actively engage in discussions, problem-solving activities and practical demonstrations. By involving farmers in the learning process, facilitators ensure that knowledge is co-created and relevant to participants' experiences.
2. **Simplicity**: FFS facilitators use simple language and concepts to convey information about agricultural practices. They avoid technical jargon and complex terminology, making the content accessible to all farmers, regardless of their education level. Simple explanations and demonstrations ensure that farmers understand and can apply new techniques effectively.
3. **Valuation and management of experiences**: Farmers bring valuable practical experiences to FFS sessions, which facilitators recognize and integrate into the learning process. They encourage farmers to share their successes, challenges and local knowledge, which serves as the basis for new learning. By valuing and managing these experiences, facilitators create a collaborative learning environment.
4. **Time management**: FFS facilitators carefully manage the time available during each session to cover the planned activities. They allocate time for discussions, practical demonstrations and hands-on activities while ensuring that sessions stay within the scheduled timeframe. Effective time management allows facilitators to address key topics while accommodating the needs and interests of participants.

These principles guide FFS facilitators in creating engaging, effective and participatory learning experiences for farmers. By focusing on participation, simplicity, the integration of experiences and time management, facilitators empower farmers to improve their agricultural practices and enhance their livelihoods.

ANNEX 3

Facilitation methods in Farmer Field Schools

Farmer Field Schools (FFS) employ various methods to engage participants, enhance learning, and promote practical skills development. Here are some key facilitation methods used in FFS:

1. **Group discussions**: Facilitators lead discussions where farmers share experiences and discuss agricultural challenges. For example, farmers might discuss the best methods for controlling pests such as coconut rhinoceros beetles or strategies for increasing cassava yields.
2. **Demonstrations**: Facilitators demonstrate agricultural techniques, such as planting sweet potatoes or preparing compost. Farmers observe and learn by watching these demonstrations before applying the techniques on their own farms.
3. **Hands-on activities**: Farmers engage in hands-on tasks such as planting, pruning fruit trees or setting up compost bins. For instance, farmers might learn how to build raised beds for vegetable cultivation through practical activities.
4. **Field visits**: Facilitators organize visits to successful farms where innovative practices are being used, allowing farmers to observe, ask questions, and learn from experienced practitioners. For example, farmers visit farms where techniques such as intercropping bananas with root crops or implementing agroforestry systems are being practised and learn from local success stories.
5. Role-playing: Farmers participate in role-playing exercises to practise skills such as understanding the interactions between pests and their natural enemies in agricultural ecosystems. In another instance, they may role-play scenarios where they negotiate with buyers for higher prices for their produce.
6. **Small group activities**: Facilitators divide farmers into small groups to work on specific tasks or projects, such as planning farm layouts, designing pest management strategies, developing plans for establishing community seed banks, or discussing strategies for diversifying income sources. These activities promote collaboration and teamwork among participants, fostering peer learning and active engagement.
7. **Problem-solving exercises**: Facilitators present real-life farming problems for farmers to solve together. For instance, farmers might brainstorm solutions to address soil erosion or devise strategies to manage invasive plant species or the cocoa pod borer.
8. **Field trials**: Facilitators organize field trials or comparative experiments where farmers test different agricultural practices or technologies. Farmers participate in designing, implementing and evaluating the trials, which allows them to assess the effectiveness of various approaches firsthand. For example, they might compare the effectiveness of different mulching techniques for conserving soil moisture in vegetable gardens.
9. **Interactive workshops**. Facilitators organize workshops on topics such as composting, integrated pest management or post-harvest handling. Farmers participate in hands-on activities such as making compost piles or setting up pheromone traps for pest control. These workshops integrate presentations, group discussions and practical exercises to provide comprehensive learning experiences.
10. **Reflection and feedback**: Farmers engage in reflection sessions to evaluate their learning experiences and provide feedback on the training process. These sessions allow farmers to assess their progress, identify areas for improvement, and share insights with their peers. For example,

they might discuss what they have learned about soil conservation practices or provide feedback on the effectiveness of training methods used.

11. **Storytelling**: Facilitators use storytelling to convey information and lessons in a narrative form. Stories about successful farming practices or challenges overcome can inspire participants and make complex concepts more relatable. For example, facilitators might share stories about successful agroforestry projects or traditional farming techniques passed down through generations.
12. **Visual aids**: Facilitators use visual aids such as posters, charts, diagrams and videos to illustrate concepts and enhance understanding. For instance, they might use posters to show the lifecycle of a pest or a video demonstration of proper pruning techniques for fruit trees. Visual aids help clarify concepts and reinforce key messages during training sessions.
13. **Field exercises**: Farmers engage in field exercises to practise skills such as grafting fruit trees or installing drip irrigation systems. For example, they might practise grafting mango trees or setting up simple drip irrigation systems in their own fields. These exercises offer hands-on experience and immediate feedback on their performance.
14. **Case studies**: Facilitators present case studies of successful farming projects. For example, they might share a case study of a successful rice cultivation project or a community-based mangrove restoration initiative.
15. **Debate (presentation)**: Farmers engage in debates or presentations on agricultural topics. They might debate the pros and cons of organic farming versus conventional farming, or present research findings on climate-resilient crop varieties.
16. **Brainstorming**: Farmers brainstorm ideas for addressing agricultural challenges. For instance, they might brainstorm ways to improve post-harvest handling practices or generate ideas for income-generating activities.

These facilitation methods create engaging learning environments in FFS, allowing farmers in Solomon Islands to acquire new knowledge, develop practical skills, and improve their agricultural practices.

ANNEX 4

Questioning techniques

During facilitation, three techniques can be used to ensure effective interaction:

1. **The reformulation technique**
   The reformulation technique in facilitation involves restating a participant's opinion or statement to the group without adding any new information.

   Its purpose is to encourage the speaker to elaborate on their point of view and to stimulate further discussion among participants.

   By repeating what was said, the facilitator acknowledges the speaker's contribution and ensures that everyone in the group hears and understands the idea.

   For example, if a participant says, "I think we should focus on organic farming methods", the facilitator might reformulate it as, "So, you believe our priority should be organic farming methods?"

   This technique helps clarify the speaker's message and can lead to deeper exploration of the topic.

   Additionally, it encourages active listening among participants and fosters a collaborative learning environment where everyone's opinions are valued and considered.

2. **The recovery technique**
   The recovery technique in facilitation involves various methods to enhance engagement and understanding among participants.

   These methods include test questions to clarify terms, directing questions to specific individuals, inviting additional responses, repeating questions back to the speaker, redirecting questions to involve others, bringing back previous discussions, and articulating unresolved issues.

   The purpose of this technique is to deepen understanding, encourage participation, and ensure clarity in group discussions.

   For example, in an FFS session on pest management, the facilitator observes that there is confusion about biological control and asks, "Can someone explain what we mean by biological control?" to prompt recall and summarization. If there's still uncertainty, the facilitator might ask a participant, "Can you share your understanding of biological control?" This encourages him or her to contribute and clarifies the concept for the group.

3. **The synthesis technique**
   The synthesis technique in facilitation involves summarizing key points of discussion, identifying areas of agreement or disagreement, and helping the group reach consensus.

   Its purpose is to promote understanding, facilitate decision-making, and highlight areas of consensus or contention.

   For example, after discussing pest management strategies, the facilitator might summarize, "So, it seems we agree that integrated pest management is effective, but we have differing opinions on the use of chemical pesticides."

These questioning techniques help maintain engagement, foster communication, and ensure effective interaction among participants during facilitation sessions.

ANNEX 5

The Communication Concept

Communication encompasses strategies employed by individuals or groups to exchange resources and ideas with others.

When transmitting a message between a sender and receiver, various factors influence the effectiveness of communication. These factors can act as filters, altering how the message is perceived and understood. In a Farmer Field School (FFS) setting, where agricultural knowledge is shared among participants, the following filters play a crucial role in shaping the learning experience:

1. **Education**: The level of education of both the sender (facilitator) and the receiver (farmers) can influence communication.

   For instance, if a facilitator uses complex scientific terms without considering the farmers' educational backgrounds, the message may not be effectively understood.

   To overcome this, the facilitator should adapt their language to match the farmers' level of education, ensuring clarity and comprehension.

2. **Prejudices**: Preconceived notions or biases held by both the sender and the receiver can impact communication. In FFS, farmers may have traditional beliefs about farming practices that differ from modern agricultural techniques.

   If a facilitator disregards these prejudices and imposes new methods without addressing farmers' concerns, the message may not be well-received. An example of this might be when introducing integrated pest management techniques to farmers who traditionally rely heavily on chemical pesticides.

   The facilitator should acknowledge farmers' concerns about integrated pest management (IPM) and demonstrate its benefits, gradually changing their perceptions.

3. **Personal experiences**: Personal experiences shape how individuals interpret messages. In FFS, farmers bring their own experiences and knowledge to the learning process. For example, when discussing soil fertility management, farmers who have successfully used organic composting methods may be more receptive to learning about composting techniques. In contrast, farmers who have struggled with soil erosion may be more interested in learning about conservation tillage methods.

   The facilitator should recognize and leverage these personal experiences to enhance learning.

4. **Cultural background**: Cultural differences can also act as filters in communication. For example, in some cultures, hierarchical structures may discourage open dialogue between facilitators and participants.

   In such cases, the facilitator should establish a comfortable environment where farmers feel free to ask questions and share their opinions.

   Using participatory methods like group discussions and role-playing can help overcome cultural barriers and encourage active participation.

5. **Language**: Differences in language or dialects between the sender and receiver can hinder communication.

   In FFS, if the facilitator and farmers speak different languages or dialects, misunderstandings may occur.

   Providing bilingual facilitation or using visual aids can bridge this gap and ensure effective communication.

Understanding these filters is essential for effective communication in FFS. Facilitators must be mindful of these factors and employ strategies to overcome them, ensuring that agricultural knowledge is conveyed clearly and comprehensively to all participants.

In FFS, effective communication goes beyond verbal expression and considers several factors that influence how messages are conveyed:

- **Volume**
  - The speaker should adjust his or her volume to ensure that everyone in the audience can hear, considering the group size and environment.
  - In a FFS session held in an open field, the facilitator adjusts their volume so that even participants standing at the back can hear clearly without straining.
- **Rhythm**
  - Speaking too quickly can make it difficult for listeners to understand, while a steady pace ensures clarity and comprehension.
  - During a discussion about crop rotation techniques, the facilitator speaks at a steady pace, allowing participants enough time to process each point before moving on to the next.
- **Tone**
  - The tone of voice can vary widely, encapsulating a spectrum of emotions and intentions that significantly impact the message's reception such as affirmative, interrogative or aggressive.
  - When discussing the importance of soil conservation practices, the facilitator uses an affirmative tone to convey enthusiasm and confidence in the effectiveness of the techniques.
- **Articulation and pronunciation**
  - Clear articulation and accurate pronunciation help ensure that words are understood correctly, avoiding misunderstandings.
  - In a session on planting methods, the facilitator carefully articulates each step, ensuring that words like 'fertilizer' and 'germination' are pronounced clearly.
- **Eye contact**
  - Maintaining eye contact with the audience demonstrates interest and fosters connection.
  - While explaining the benefits of organic farming, the facilitator maintains eye contact with different participants, encouraging active participation.
- **Silences**
  - Pauses in speech provide time for reflection and emphasize important points.
  - After posing a thought-provoking question about sustainable agriculture, the facilitator pauses, allowing participants time to reflect before sharing their thoughts.
- **Gestures**
  - Non-verbal gestures complement verbal communication, providing rhythm and emphasis.
  - When discussing the growth stages of crops, the facilitator uses hand gestures to illustrate each stage's height, reinforcing the verbal description.
- **Movement:**
  - Controlled movement adds dynamism to presentations, but excessive or

predictable movements can be distracting.

- While demonstrating planting techniques, the facilitator moves around the field, engaging with different groups of participants, avoiding pacing back and forth to maintain focus on the instruction.

In FFS sessions, facilitators should consider these factors to ensure clear and effective communication with participants, enhancing the learning experience and engagement.

ANNEX 6

Leadership in Farmer Field Schools

Leadership involves guiding, leading, influencing and inspiring a group, which are qualities that can either be inherent or developed through training and knowledge acquisition. In Farmer Field Schools (FFS), both committee members and facilitators hold crucial leadership roles. Moreover, all FFS participants are expected to demonstrate leadership within their communities, fostering positive changes in behaviour and practices.

The effective functioning of an FFS group relies on various internal and external factors. To enhance group dynamics, facilitators and committee members adhere to the **Rule of the Three Functions**:

- Communication
- Facilitation
- Control.

Leadership in FFS is essential for effective group functioning and achieving agricultural objectives. Below are examples of how communication, facilitation and control are practised in FFS:

1. **Communication**
   Communication is vital for FFS groups because it allows members to participate and make informed decisions.

   For example, during a session on pest management, farmers discuss different methods of pest control without using chemical pesticides.

   The facilitator encourages open dialogue and shares success stories of farmers who have effectively managed pests using organic methods.

   This encourages participants to share ideas, ask questions, and provide feedback, promoting a culture of two-way communication within the group.

2. **Facilitation**
   Facilitation or group leadership is crucial because it encourages active participation among members.

   Leaders in the group stimulate and promote participation in FFS activities, which is closely linked to effective communication.

   For example, during an FFS meeting on soil conservation, the facilitator engages participants in hands-on activities such as building contour trenches and mulching techniques.

   The facilitator motivates and encourages active participation, ensuring that all members are involved in practical demonstrations. This interactive approach keeps participants engaged and fosters a sense of ownership over the learning process.

3. **Control**
   Control is essential in any organization, although people may resist it. Educating participants about the importance of control is crucial because trust doesn't eliminate the need for it.

   Control ensures the reliability of information and reinforces participation, extending beyond financial aspects to all facets of the group's operation.

   For example, in an FFS group responsible for managing a communal seed bank, the participants elect a committee to oversee seed distribution and record-keeping. Regular audits and reviews are conducted to monitor seed usage and maintain accurate records.

   This control mechanism ensures that resources are managed effectively and that participants adhere to established guidelines.

ANNEX 7

Learner types based on level of experience

Facilitator behaviours in FFS depend on the training method and the types of learners. We can distinguish three main types:

1. **The inexperienced learner**: These learners have little experience in the subject matter and lack self-confidence. They often expect clear instructions from the facilitator. In FFS, the facilitator's role with inexperienced learners involves the following:
    - **Providing clear instructions and guidance**: In a session on soil preparation, an inexperienced learner might need step-by-step instructions on how to till the soil and add organic amendments.
    - **Demonstrating techniques and fundamental theories**: For instance, in a workshop on composting, the facilitator might demonstrate how to layer organic materials and explain the microbial process of decomposition.
    - **Encouraging and reinforcing the learning process**: During a discussion on crop rotation, the facilitator might praise an inexperienced learner for correctly identifying the benefits of rotating crops and encourage them to share their experiences.
    - **Supervising and guiding when learners try new behaviours or skills**: In a practical session on seed planting, an inexperienced learner may need the facilitator's guidance on proper spacing and depth for planting seeds. For example, in a session on pest management, an inexperienced learner might need the facilitator to demonstrate how to set up a pheromone trap and explain why it is effective.

This approach ensures that inexperienced learners receive the support and guidance they need to develop their skills and knowledge effectively in the FFS.

2. **The collaborative learner**: Collaborative learners arrive with some experience and maturity. They are eager to share ideas with others and apply new knowledge to their work. The facilitator's role with collaborative learners consists in the following:
    - **Collaborating with learners based on their interests and needs**: For example, in a session on water management, a collaborative learner who is experienced in irrigation techniques might work with the facilitator to explore advanced methods.
    - **Informing learners about learning objectives, directions and reasons for the learning structure**: During a workshop on integrated pest management, the facilitator might explain the objectives of the session and how it aligns with the overall goals of sustainable agriculture.
    - **Creating a learning environment where learners can share their experiences and develop existing knowledge**: In a group activity on organic fertilizer production, collaborative learners might share their experiences with composting and then work together to explore innovative techniques.
    - **Encouraging collaborative learning through group discussions and knowledge sharing**: For instance, in a discussion about sustainable farming practices, collaborative learners might share their experiences with intercropping and then engage in a group discussion about its benefits, contributing to a rich exchange of ideas and experiences.

This approach fosters a dynamic learning environment where collaborative learners

actively participate and contribute to the collective learning process in the FFS.

3. **The independent learner**: These learners are already experts in the topic but seek to deepen their knowledge through interactions with peers. The facilitator's role with independent learners involves the following:
    - **Managing the learning structure by ensuring that discussions stay on track and observing group dynamics**: For instance, in a workshop on sustainable agriculture, an independent learner might lead a discussion on crop rotation techniques while the facilitator monitors the discussion to ensure that it remains focused and productivity.
    - **Leading focus groups and acting as an expert resource when needed**: During a field exercise on agroforestry, an independent learner might lead a focus group on tree planting methods, drawing on their expertise, while the facilitator provides additional insights and guidance as required
    - **Providing opportunities for independent learners to share their knowledge and expertise with the group**: In a session on pest management, an independent learner might share innovative techniques for controlling pests organically, fostering peer-to-peer learning within the group.
    - **Encouraging collaboration and knowledge sharing among independent learners**: For example, during a discussion on water conservation, an independent learner might share their experiences with drip irrigation systems, sparking a conversation among participants about effective water-saving strategies. For example, in a session on organic farming, an independent learner might lead a discussion on soil health while the facilitator observes and intervenes when necessary to keep the discussion focused.

By understanding these learner types, facilitators can effectively engage independent learners, leveraging their expertise to enrich the learning experience for all participants in the FFS.

ANNEX 8

Participant behaviours during Farmer Field School sessions

In a school field, the facilitator faces people whose behaviour may or may not facilitate the conduct of the learning process. The table below will help the facilitator to appreciate each other and to determine the course of action to take (Table A1).

Table A1. Participants behaviours

Behaviour and Probable Origin	What the Facilitator Should Do
Suspicious Distrust among participants, fearing imposition of ideas not aligned with their values.	The facilitator engages in open dialogue, listens attentively, and establishes credibility. Reminds participants of the facilitator's role as a neutral guide, not an opinion imposer.
Quarrelsome Criticizes and disapproves of everything: feelings, ideas, actions, decisions.	The facilitator tries to understand and clarify issues. Redirects excessive criticism and encourages constructive contributions.
He Who Does Not Understand Struggles to comprehend.	The facilitator explains using simpler language and relatable examples. Demonstrates patience and empathy.
Mange-Tout Agrees excessively or flatters the facilitator.	Acknowledges contributions but does not dwell on excessive agreement. Redirects focus to group consensus.
Skeptic Doubts others' opinions, including the facilitator's.	The facilitator encourages the skeptic to propose solutions and demonstrates competence. Gradually, the skeptic may seek the facilitator's opinion.
Quiet Man Speaks little and defensively.	Encourages the quiet participant to share views. Provides opportunities for contribution outside sessions and gently draws out participation.
Funny One Injects humor, sometimes excessive.	Tactfully redirects humor to maintain focus on objectives. Integrates humor positively if aligned with goals.
Primary Expresses rigid, categorical opinions.	Encourages flexibility and nuance in opinions. Integrates categorical remarks constructively.
Unrepentant Talker Dominates discussions.	Ensures others have opportunities to speak. Skillfully manages the talker without confrontation.
Shy, Self-Conscious Speaks little due to lack of confidence.	Builds rapport outside sessions. Highlights their contributions and gently encourages participation.

Table A1. (CONT)

Behaviour and Probable Origin	What the Facilitator Should Do
Slow Spirit Lags behind or struggles to keep up.	Provides explicit guidance, using comparisons and illustrations. Maintains attention and avoids rushing.
The Historian, The Speechmaker Extensive anecdotes and speeches.	Redirects to the agenda, gently steering towards relevant topics.

Source: FAO. 2016. *Farmer field school Guidance Document Planning for quality programmes*. Rome.
https://openknowledge.fao.org/handle/20.500.14283/i5296e

ANNEX 9

Description of the main participatory tools used during the baseline survey

Tool 1: The semi-structured interview

The objective

The semi-structured interview is a key participatory planning tool used in Farmers Field Schools (FFS). Its objective is to gather information comprehensively at different stages of establishing and implementing FFS. This method accompanies other tools in FFS that require asking questions and allows for a flexible approach to gathering information. It is designed to elicit detailed and nuanced responses from participants.

Conducting the semi-structured interview

1. **Interview guide preparation**: The interviewer creates a guide with essential areas to focus on. The guide evolves as the interview progresses.
2. **Flexible questioning**: Questions are constructed during the interview based on the conversation. The interviewer listens carefully and asks further questions to deepen understanding.
3. **Keywords for probing questions**: Certain keywords and key phrases like "What, for example?", "For what?", "When?", "Or?" and "How?" help ask probing questions to explore topics further.
4. **Informal conversation style**: The interview should feel like an informal conversation where questions logically follow one another. Flexibility is key.

Procedure for creating the semi-structured interview

1. **Respecting the interviewee**
   - Dress appropriately and use a small, discreet notebook.
   - Begin with greetings, introduce the team, and state the study objectives.
2. **Location and arrangement**
   - Conduct the interview where the interviewee feels comfortable, such as in the fields or under a tree.
   - Ensure that everyone is seated comfortably to create an equal atmosphere.
3. **Order of questions**
   - Start with general and less sensitive questions before moving to specific ones.
   - Begin with questions about the interviewee's current activities or visible surroundings.
4. **Note-taking**
   - Take notes after the interview, if possible, to avoid distracting the interviewee.
5. **Duration of the interview**
   - Keep the interview within reasonable time limits to avoid tiring the interviewee.
6. **Asking questions**
   - Avoid closed questions that lead to yes/no answers.
   - Avoid leading questions that bias the answers.
   - Avoid implicit presumptions or vague questions that may confuse the interviewee.
   - Use units of measurement understood by the interviewee to ensure clarity.

Overall, the semi-structured interview aims to gather detailed information from participants in a comfortable and open manner, fostering a dialogue that allows for deeper insights into the topics discussed.

Tool 2: The historical profile

Purpose

The historical profile helps us understand important events that affected life in the village over time (Table A2).

Procedure for producing the historical profile

1. **Involve older and younger people**: Gather older folks who have lived in the village for a long time and young people who can share recent events.
2. **Ask about important events**:
   - Ask about significant events in the village's history, focusing on local landmarks such as flooding, earthquakes, famines, droughts, wars and crop failures.
   - Try to find out when these events happened.
3. **Timeline of events**:
   - Explore how events changed the village over time.
   - Ask about changes in society or businesses due to these events.

Table A2. Example of a historical profile of a village in Solomon Islands

Date	Event	Impacts (induced changes)
Pre-colonial times	Indigenous tribes settled in the area	Establishment of traditional customs and social structures
Late 1800s	Arrival of European explorers and traders	Introduction of new goods and diseases, changes in trade patterns
Early 20th century	British colonization	Imposition of colonial rule, changes in land ownership, introduction of Western education
1942–1945	World War II in the Pacific	Japanese occupation, significant impact on local communities, destruction of infrastructure
1978	Independence from British rule	Establishment of national sovereignty, changes in governance

Table A2. (CONT)

2007–2008	Ethnic tensions	Internal conflicts, displacement of populations, impact on social cohesion
2013	Earthquake and tsunami	Destruction of homes and infrastructure, loss of lives, humanitarian assistance
Present	Climate change effects (rising sea levels, coral bleaching)	Threats to coastal communities, loss of traditional fishing grounds, adaptation efforts

This historical profile gives an overview of important events that have influenced the village's history, from before colonial times to today. It helps us understand how these past events affected the village and how people dealt with challenges and changes.

Tool 3: The village map

Objectives

1. **Highlight available services and resources**: The map identifies various services (e.g. schools, health centres) and resources (e.g. water sources, forests) available in the village.
2. **Understand perceptions and interests of different socio-professional groups**: This map helps understand how different groups in the village perceive and use its resources, such as farmers, women and youth.

Procedure

1. **Appoint a volunteer designer**: Choose someone from the community to be the map designer. It's crucial that it is the community that creates the map.
2. **Draw the map on a large sheet**: Start with the general contours like cardinal points, nearby hills, roads and watercourses.
3. **Add details**: Draw other features like fields, lowlands, infrastructure (houses, schools) and forests, until the group is satisfied.
4. **Work directly on the sheet**: Begin with a pencil to sketch out the maps, and then use markers to make it clear and readable.
5. **Choose colours and symbols**: Use different colours and symbols to represent different elements on the map (e.g. blue for water sources, green for forests).
6. **Create a legend**: Make a legend on the map to explain the meaning of the colours and symbols used.

By following this procedure, the village map becomes a visual representation of the village's resources, services and infrastructure, helping both the community and outsiders understand its layout and potential.

Tool 4: Transects or side paths

Objectives

1. **Provide a horizontal section of the studied area**: Transects give a cross-sectional view of the land, covering different aspects of the village ecosystem in Solomon Islands.

2. **Cover variations in the ecosystem**: Transects help cover various changes and features of the village, ensuring a comprehensive study.

Procedure

1. **Choose a direction**
    - Start by selecting a direction that covers most of the variations in the ecosystem of Solomon Islands.
2. **Trace the transect**
    - Begin from one end of the village or area and walk to the opposite end.
    - You can also start from the middle and cover one half, then come back for the other half later.
    - Alternatively, follow a circular or winding route depending on the information needed.
3. **Involve people from the community**
    - It's helpful to have community members accompany you during the transect.
    - Stop occasionally to discuss observations with them.
4. **Observe and note down**
    - While walking, observe and note down characteristics of soils, crops, trees, livestock and other activities. Also, note down any problems related to these aspects.
    - Transects provide a ground-level view of the landscape in Solomon Islands, complementing aerial views from maps; they help understand the diversity of the ecosystem and identify areas of concern or potential improvement.

Tool 5: The inventory of livelihoods (activities)

Objectives

1. **Identify and prioritize community-led activities**: The directory helps identify and rank activities that are important for the community's livelihood. For example, it helps in recognizing which activities, like farming or fishing, are the most crucial for people's lives.
2. **Facilitate the choice of crops and animal species for learning purposes**: It assists in selecting which crops and animals should be focused on for educational purposes in programmes like FFS. For instance, it helps in deciding which crops are best for teaching and learning, such as taro, sweet potato or rice, or animals, such as pigs or chickens.

Procedure

1. **Involve the community**: The community should be involved in the process, aiming for consensus. For instance, in Solomon Islands, people from the village come together to create the livelihood directory.
2. **List activities**: Ask the community to list all their main activities, for example, farming, fishing, trading, selling produce in the market, making handicrafts.
3. **Rank activities**: Participants rank the activities based on their importance, without the facilitator imposing any criteria. This ranking is performed by consensus, i.e. everyone agrees on the order of importance. For example, the community might collectively decide that farming is the most important activity, followed by fishing and then selling produce.

4. **List crops and animals**: Depending on the focus of the programme (crops, livestock, or both), list the specific crops grown or animals raised, for example, crops such as taro, sweet potatoes or bananas, or animals such as pigs, chickens, goats.
5. **Prioritize crops and animals**: Prioritize the listed crops and animals based on importance; this also involves community consensus. For instance, the community might decide that taro and pigs are the most important for their livelihoods.
6. **Use drawings or symbols**: In order to involve everyone, use drawings or symbols to represent the activities. This helps even those who can't read or write to participate.
7. **Use a collective voting method**: Use a collective voting method to rank activities or items. For example, representatives from the community vote on the importance of each crop or animal using stones. The results are then presented to the whole community for validation.

This process ensures that the community's voices are heard in identifying and prioritizing the activities that are essential for their livelihoods.

The collective or consensual voting method

We use this method in community decisions, especially when we need to classify or prioritize things together. Let's look at how we can use this method to rank agricultural crops in a village in Solomon Islands.

1. **Listing of agricultural crops in the village** such as sweet potatoes, yams, cassava, slippery cabbage, bananas and coconuts.
2. **Making drawings**: Drawings are made on paper sheets to represent each crop, allowing illiterate community members to participate.
3. **Selecting representatives**: Identify 6 representatives from the community to make a classification proposal. This group could include 2 men, 2 women and 2 young people.
4. **Providing stones for voting**: Each representative is given a sufficient number of small stones for the vote. For example, if there are 6 crops, each representative could receive 60 stones.
5. **Collective voting**: The 6 representatives carry out a collective vote by assigning stones to each crop based on its importance. They place stones next to each crop, with more stones indicating higher importance. For example, if sweet potato is considered the most important crop, it might receive the most stones, while coconuts might receive fewer stones if seen as less crucial. The representatives discuss and reach a consensus on the importance of each crop.
6. **Presenting the result to the assembly**: After the classification, the 6 representatives present the result to the entire assembly. The assembly can discuss and amend the classification if necessary, ensuring everyone is satisfied. Finally, the assembly validates the final classification.

This method ensures that the entire community is involved in prioritizing agricultural crops, using a fair and participatory approach that considers everyone's opinions.

Tool 6: The seasonal calendar

Objectives

1. **Identify community activities throughout the year**: The calendar helps us understand what activities the community, or specific groups like women, carry out during each month or season. For example, we can see when people plant crops, harvest, celebrate festivals, or engage in other activities (Table A3).
2. **Better plan field school activities**: The calendar helps us plan activities for FFS throughout the year, considering the community's seasonal occupations. For instance, we can schedule learning sessions on planting during the planting season.

Procedure

1. **Forming groups**: Depending on the objective, form groups. For example, if the group involves gender-specific activities, include separate groups of men and women; if the group involves general activities, include mixed groups.
2. **Materials needed**: Use a large sheet of paper and markers to draw the calendar.
3. **Dividing the year**: Divide the year into months using local names or seasons: Use different colours or symbols for each month or season to make it easier to visualize.
4. **Mentioning activities**: Write down the various activities that occur throughout the year, such as agricultural activities like planting, weeding and harvesting, and other activities, such as ceremonies, festivals and vaccination campaigns.
5. **Analysing the result**: After completing the calendar, analyse it together as a community. Highlight times of the year with many activities. Identify relationships between activities. For example, you might notice that planting and harvesting seasons coincide with certain festivals or ceremonies.

Table A3. Seasonal calendar for crops in the Solomon Islands

Month	Seasonal activities
January	Planting of root crops
February	Planting of cash crops and bananas
March	Planting of cash crops and bananas
April	Weeding and maintenance
May	Celebration Independence from British rule
June	Ethnic tensions
July	Earthquake and tsunami
August	Climate change effects (rising sea levels, coral bleaching)
September	Preparation for planting
October	Planting of cash crops and bananas
November	Planting of cash crops and bananas
December	Weeding and maintenance

Table A4. Seasonal calendar for animals in Solomon Islands (cattle)

Month	Seasonal activities
January	Grazing in pastures
February	Continuation of grazing
March	Grazing in pastures
April	Grazing and vaccination
May	Grazing in pastures
June	Grazing and preparation for breeding
July	Grazing and breeding
August	Grazing and monitoring health
September	Grazing and preparation for dry season
October	Grazing in pastures
November	Grazing and preparation for rainy season
December	Grazing and monitoring health

This way, the seasonal calendar helps us understand the rhythm of life in Solomon Islands and plan our activities accordingly, ensuring that we make the most of each season.

This seasonal calendar uses different symbols to represent various activities related to crop cultivation and animal husbandry in Solomon Islands throughout the year.

Tool 7: The daily calendar

Goals

1. **Knowing the timetable by gender or socio-professional group**: The daily calendar helps us understand the typical daily schedules of men and women, or different groups of people in our community.
2. **Helping to better plan daily activities**: It assists in planning the activities for our FFS each day, considering the different daily routines of men and women (Table A4).

Procedure for drawing up the daily calendar

1. **Organize separate focus groups with men and women**: Gather men and women separately to discuss their daily activities.
2. **Inventory of daily activities**: First, make a list of all the daily activities of each group. For example, women might list cooking, childcare, and tending to gardens, while men might list fishing, farming, and construction work.
3. **Writing down activities chronologically**: On a large sheet of paper, write down these activities in chronological order, following the daily routine of each group. For instance, if women start their day with cooking breakfast, this activity would go at the beginning of their list, while for men, fishing might be their first activity.

4. **Time management and additional activities**: Ask about time management issues and if there are any other activities each person would like to do. For example, women might express a desire to attend literacy classes in addition to their daily chores.

Example: Let's say we gather a group of women and men separately from a village in Solomon Islands to create their daily calendars.

Women's daily calendar

- 5:00 am: Wake up and fetch water
- 6:00 am: Prepare breakfast and get the children ready for school
- 7:00 am: Cook for the family and tend to the garden
- 11:00 am: Prepare lunch and perform household chores
- 2:00 pm: Do the laundry and take care of the children
- 4:00 pm: Harvest vegetables and perform other garden tasks
- 6:00 pm: Prepare dinner preparation and devote time for the family.

Men's daily calendar

- 4:30 am: Prepare fishing gear and go out to sea
- 6:00 am: Start fishing
- 11:00 am: Return from fishing and prepare lunch
- 12:00 pm: Rest and attend to household repairs
- 3:00 pm: Work on the farm or on construction projects
- 6:00 pm: Have dinner and devote time for the family.

These calendars help us understand the daily routines of men and women in the community, and to plan FFS activities effectively.

Tool 8: Proportional stacking

Proportional stacking is a tool used in FFS to compare the importance of different elements, like crops or animals, relative to each other. Let's break it down:

How it works

- **Comparing importance**: This helps understand how important one thing is compared to another. For example, it can help us see which crops are more crucial to farmers or which diseases affect animals the most.
- **Visualizing allocation**: This shows how resources are allocated, like where farmers invest their time or money.
- **Avoiding sensitive questions**: In Solomon Islands, where people might feel uncomfortable sharing exact numbers of animals they own, proportional stacking helps bypass these questions.

Objectives

- Understand the importance given by farmers to different issues.
- Visualize how resources are allocated.

Procedure

1. **Interview farmers**: Interview one farmer at a time; it's important to interview many farmers in the same area for meaningful results.
2. **Define categories**: Ask farmers to define categories of crops or animals they have on their farms. For example, types of crops (beans, corn, yams) or animals (cattle, pigs).
3. **Distributing pebbles**:
    - Give the farmers 100 pebbles each, representing all their crops or animals for the previous year.

- Ask them to divide the pebbles into two groups: crops that yields a satisfactory production, and crops that yielded an unsatisfactory production.

4. **Identifying causes**:
   - Take the unsatisfactory production pebbles and ask the farmers to distribute them among the major causes (e.g. pests, diseases, weather).
   - Add a category for any other causes they mention.
5. **Calculating percentages**:
   - Since we started with 100 pebbles, the number of pebbles under each cause represents the percentage of causes of low production per crop.
6. **Repeat for all crops/animals**: Repeat the process for each crop or variety of each crop that the farmer has.

Example: Let's say we are talking to a farmer in Solomon Islands. He or she has various crops, such as taro, sweet potatoes and bananas. We give the farmer 100 pebbles and ask him/her to divide them based on how well each crop yielded last year. Then, we ask the farmer to distribute some of these pebbles among the causes that may have affected crop yields such as pests, diseases and weather for each crop. This helps us understand which issues are affecting their crops the most and how they allocate resources accordingly.

Tool 9: The Notification Matrix

The notification matrix is a tool used in FFS to help understand local perspectives on various topics, such as livestock issues or diseases. It is a chart that helps people communicate better, ensuring that everyone is on the same page when discussing certain topics (Table A5).

1. **Objective**: The objective of the Notification Matrix is to establish a connection between specific criteria and the subjects being evaluated. For instance, it helps answer questions like, "What do farmers know about the relationship between clinical signs and different diseases?"
2. **Matrix structure**: The matrix is typically organized with criteria listed along the top and subjects or topics listed along the side. Each intersection of criteria and subject represents a point of understanding or communication.
3. **Example from Solomon Islands**: Let's say we're discussing livestock diseases in Solomon Islands. Table A5 presents a Notification Matrix showing some common diseases such as theileriosis, trypanosomosis, anthrax, mastitis and diarrhoea, and how they affect factors such as calf mortality, adult mortality, fall of lactation, loss of income and weight loss.

In this representation, '**–**' indicates low severity, '**O**' indicates medium severity and '**+**' indicates high severity. (Note: we can use pictograms

Table A5. Notification Matrix

Criteria	Theileriosis	Trypana	Anthrax	Mastitis	Diarrhea
Calf mortality	–	O	+	O	+
Adult mortality	O	+	+		O
Fall of lactation	–	–	–	+	O
Loss of income	O	+	+	–	O
Weight loss	–	O	O	O	+

for easy understand than the symbols.) In this example, farmers in Solomon Islands might perceive anthrax as having a high calf mortality rate and high adult mortality rate, while mastitis might be associated with a high fall of lactation and a medium weight loss.

By using this matrix, facilitators and breeders can ensure that they are discussing the same disease or issue by aligning their understanding of criteria like clinical signs and outcomes. It helps everyone involved have a clearer and more unified understanding of the topic being discussed.

Tool 10: The problems and solutions matrix

This tool is used to help communities identify, analyse and prioritize their challenges and potential solutions, specifically in the context of agricultural and livestock activities. A simplified explanation of how it works, using examples from Solomon Islands is presented below.

Step 1: Identifying and prioritizing problems

In this step, the community identifies and prioritizes the main challenges they face. These could be related to agricultural practices, livestock management or other factors affecting their livelihoods. For example, in Solomon Islands, some common problems might include:

- diseases and pests affecting crops and livestock;
- poor knowledge of cultivation techniques among farmers;
- a low amount of water available for irrigation;
- poor management of farming areas such as rice paddies.

After listing these problems, the community prioritizes them based on their severity or impact. They might vote collectively to decide which issues are most pressing. For instance, they might decide that diseases and pests are the most urgent problem, followed by low knowledge of cultivation techniques, and so on.

Step 2: Identifying and prioritizing solutions

Once the main problems and their causes are identified, the community brainstorm solutions. The focus is on finding long-lasting solutions that address the root causes of the problems. In Solomon Islands, for example, in order to tackle diseases and pests affecting crops, solutions might include:

- following a crop calendar;
- using traditional methods such as ash mixed with sand, or natural solutions like tephrosia juice mixed with Thithonia and castor oil;
- implementing early warning systems.

For livestock diseases like foot-and-mouth disease, solutions might include:

- vaccination programmes;
- limiting the movement of livestock;
- quarantine measures for sick animals;
- symptomatic treatment and antibiotic coverage.

These potential solutions are then evaluated using criteria such as sustainability, productivity, time constraints, ease of application, costs and social acceptance. The community discusses and assigns scores to each solution based on these criteria, aiming for consensus on the most effective and feasible options.

By using this matrix, communities in Solomon Islands can systematically address their challenges and work towards sustainable solutions that improve their agricultural and livestock practices.

ANNEX 10

Group dynamics and team-building exercises

An FFS group is more than just people in the same room. Your FFS group is like a sports team! You all have a common goal – to be successful farmers. But just like any team, you might need some practice working together smoothly. This is where these fun activities come in!

Group dynamics and team-building exercises will help your FFS group:

- **get to know each other better** – make new friends and learn about each other's farming backgrounds and experiences.
- **feel comfortable working together** – break the ice and feel confident sharing ideas and working as a supportive team.
- **talk and listen better** – learn how to communicate clearly and listen to each other's thoughts and ideas.
- **solve problems together** – brainstorm and solve challenges you face on your farms as a team.

The following activities will help your FFS group get to know each other better, have fun and build teamwork skills:

- **Icebreakers**: fun ways to start your FFS meeting and help people feel comfortable with each other.
- **Energizers**: short quick activities that boost your energy after long discussions or field visits.
- **Team fun**: games and activities to just have fun and enjoy being together as a group.
- **Team skills**: activities that will help the group learn to work together and solve problems like a real team.

Remember: The most important thing is to have fun and learn from each other! Feel free to get creative and come up with your own activities that fit your group. You can even ask FFS participants to lead activities they have learned elsewhere!

Here are some examples to get you started:

- **Break the Ice (icebreakers)**
  - **Two Truths and One Lie**: Each person shares three things about themselves, but two are true and one is a lie – can you guess which is the lie?
  - **Find Someone Who**: Make a list of questions about farming experiences (e.g. "Has grown corn"); participants mingle and find someone who can answer "yes" to each question.
- **Boost Your Energy (energizers)**
  - **Quick Stretch**: Reach for the sky, touch your toes, and twist from side to side – a little movement helps everyone refocus.
  - **Funny Faces**: Make silly faces at each other for a good laugh and to break the ice
  - **Call and Response**: You say "seedlings" and they say "growing strong" – this is a fun way to get everyone engaged.
- **Just for Fun (team fun)**
  - **Farm Scavenger Hunt**: Work together to find hidden objects related to farming around the meeting area.
  - **Sing a Song**: Is there a traditional farming song everyone knows? Sing it together!
- **Learn to Work Together (team skills)**
  - **Group Puzzle**: Work together to complete a puzzle, blindfolded or with limited instructions.

- **Problem-solving Challenge**: Present a farming problem you face. Work together to brainstorm solutions!
- **Crop Planning Game**: Divide into teams and plan your next crop season together, considering soil, water and resources.

These are just a few ideas! Feel free to come up with your own activities that fit your group and learning goals. Remember, the most important thing is to have fun and learn from each other!

A. Energizers & team fun: building connections

This section provides fun activities to boost energy and help farmers get to know each other better.

1. Ship Ahoy! (icebreaker)

Goal: To help everyone feel comfortable and welcome!

Good for: starting the FFS and bringing back energy after a break.

Number of players: 20–25.

Materials: None.

How to play:

1. Imagine we are all on a big ship together!
2. One person volunteers to be the captain.
3. The captain yells, "Ship ahoy! The boat is sinking! Form groups of (number)!" (The captain chooses a number between 2 and 5.)
4. Everyone quickly finds a group with this number of people.
5. People who can't find a group are 'out'.
6. Keep playing until only 1 or 2 people are left.

Talk about it:

1. After the game, ask:
   - Did you enjoy it?
   - How did it feel when you couldn't join a group?
   - Why is it important to feel welcome in the FFS?
2. Listen to everyone's thoughts; this helps everyone feel respected and encourages discussion.

Key point: In farming, just like on a ship, we need to work together. Feeling accepted is important for everyone to learn and share.

Tip: Feel free to change this activity! You can use different words like 'Life Raft' instead of 'Ship'.

2. Body numbers (energizer)

Goal: Get energized and have some fun together!

Good for:

- starting the FFS;
- waking everyone up after a long discussion.

Materials:

- Chalkboard or whiteboard (optional).

How to play:

1. Write the numbers 1 to 10 on the board. (Tou can skip this if you don't have one.)
2. Show everyone how to use your body to make a number 1 (like holding one finger up).
3. Everyone try making a number 1 with their bodies!
4. Keep going, demonstrating each number (2 = two arms out, 3 = three fingers up), and have everyone follow along.

Tip: Get creative! You can come up with your own body shapes for the numbers.

B. Teamwork challenge – team-building exercises

1. Working Together: Pic-Pac-Boom!

Goal: See how working together helps us succeed!

Good for: Discussing teamwork and interdependence.

Materials: None.

How to Play:

1. Ask everyone to count off by threes. People who end up with the same number stand together in a group of three.
2. Give each group a number.
3. Within each group, whisper who will say "pic" (person on the left), "pac" (person in the middle) and "boom" (person on the right).
4. In each group, everyone stands up, says their word, and sits down quickly so the next person can go.
5. Once everyone in the group has said their word, they all stand up together and shout the number of another group they want to choose.
6. **Note!** Everyone in the group must stand up and call the same number at the same time.
7. If a group messes up (sits down wrong, forgets their word, calls a wrong number), they are out!
8. The last group standing wins!

Talk about it:

- Why do you think some groups got eliminated early?
- What helped the winning team succeed?
- What is interdependence? (answer: everyone relies on each other).
- Why is interdependence important for a successful team in farming? (answer: everyone has a role to play, and we all need to work together!)
- How can we encourage interdependence in our FFS group? (answer: by communicating, helping each other, and sharing ideas!).

Learning point: In farming, just like in this game, everyone plays a part. We depend on each other to succeed! By working together, we can all achieve more.

2. Building Towers: A team-building exercise for Farmer Field Schools

The Building Towers exercise in FFS is a team-building activity designed to:

- improve teamwork: This encourages participants to work together towards a common goal;
- enhance communication: This promotes communication and collaboration within teams; and
- develop problem-solving skills: This challenges participants to think creatively and find solutions to build a stable tower.

How to conduct the Building Towers exercise:

Materials:

- Drinking straws for each team (at least 20 per team)
- Masking tape (optional, for added difficulty)
- Scissors (optional, for added difficulty).

Instructions:

1. **Divide the group**: Separate the FFS participants into teams of 3–5 people.
2. **Explain the challenge**: Inform the teams that they will compete to build the tallest and most stable tower using only the provided materials.

3. **Optional challenges**:
    - You can allow teams to use a small amount of masking tape to secure connections (increases difficulty).
    - You can allow teams to cut the straws into shorter pieces for more creative building (requires scissors).
4. **Set a time limit**: Give the teams a time limit to build their towers (5–10 minutes is a good range).
5. **Let the building begin!**: Encourage communication, collaboration and creative problem-solving within each team.
6. **Time's up!** When the time runs out, instruct all teams to stop building.
7. **Measure and discuss**:
    - Have each team carefully measure the height of their tower.
    - Discuss the results:
        - Which team built the tallest tower?
        - What strategies did the winning team use?
        - How did communication and teamwork contribute to success?
        - Did anyone use the masking tape or cutting (if offered)? Did it help?
8. **Wrap up**: Discuss the importance of teamwork, communication and planning in achieving a common goal.

Tips:

- Adjust the difficulty: Adapt the difficulty based on participant age and experience.
- Add a twist: Make it more challenging by requiring the tower to hold a small object on top (like a ball of paper) for a specific time.
- Versatility: This activity works well as an energizer after a long discussion or a team-building exercise at the beginning of an FFS programme.

Learning point: Just as in building a strong and tall tower, achieving success in FFS relies on effective teamwork, communication, and collaboration. By working together, your FFS group can overcome challenges and achieve great results!

3. If You're Happy and You Know It

While this is a great song for children, it might not be the most engaging activity for adults in a FFS setting. Here are some alternative ideas that promote similar goals of creating a fun atmosphere and fostering a sense of community:

Option 1: *Call and response cheers*

This is a simple and interactive way to get everyone engaged and feeling comfortable participating.

What you'll need:

- Nothing, just your voices.

How to do it:

1. Start as the leader: Stand at the front of the group.
2. Call out a phrase: Say something related to farming or the current lesson topic.
    - Example 1: "For healthy crops!"
    - Example 2: "For a successful harvest!"
3. Group responds: Everyone in the FFS group shouts back a positive response.
    - Example 1: "Let's grow strong!"
    - Example 2: "We work together!"

Tips:

- You can alternate who calls out the phrases – a participant can lead the next round!
- Come up with different call-and-response combinations throughout the FFS programme.

Option 2: *Sharing appreciation*

This activity fosters a positive and supportive environment among FFS participants.

What you'll need:

- A ball (optional).

How to do it:

1. **Start the circle**: Ask everyone to sit or stand in a circle.
2. **Explain the activity**: Tell the group you'll be going around the circle, and each person can share something they appreciate about farming, the FFS programme or a fellow participant.
3. **Pass the appreciation (optional)**: if you're using a ball, have people hold it while they share their appreciation. Then, they pass the ball to the next person.

Tips:

- Encourage specific appreciation: Instead of just saying "I appreciate farming", someone might say, "I appreciate learning new pest control methods".
- If someone feels shy, you can offer prompts to get them started.

Both of these options are more suitable for an adult learning environment in an FFS programme. They create a positive and interactive atmosphere while encouraging participation and building a sense of community within the group.

4. Fruit Salad

The Fruit Salad team-building exercise in FFS is not designed for adult learners, but it can be a fun activity for younger participants in an FFS programme (think of the children of farmers involved in the programme). Here is why you might conduct it, and how to adapt it for a younger audience:

Reasons for conducting the Fruit Salad exercise in a youth FFS programme:

- Breaking the ice: This activity helps young participants feel comfortable with each other and the FFS setting by encouraging movement, interaction and laughter.
- Learning names: As participants call out their assigned fruits and move around, they learn each other's names in a fun way.
- Following instructions: Young learners practise listening and following directions as they stand up, call their fruit, and sit down only when instructed.

How to conduct the Fruit Salad exercise for younger participants:

Materials:

- None needed.

Instructions:

1. **Gather the group**: Have all the young participants stand in a circle with enough space to move around comfortably.
2. **Assign fruit names**: Explain that they'll be pretending to be different fruits. Whisper the name of a fruit to each participant (e.g. apple, banana, orange). Make sure each fruit has at least 2–3 participants.
3. **Practice makes perfect**: Do a quick practice round where everyone says their assigned fruit name when you point to them.
4. **The game begins!** Say,"Let's play Fruit Salad!" When you call out a specific fruit name, everyone assigned that fruit needs to run around the outside of the circle and find a new spot to stand.
5. **Fruit Salad time!** Yell "Fruit Salad!" Everyone needs to find a new spot in the circle, even if it's not next to someone with the same fruit.
6. **Repeat and have fun!** Continue calling out fruit names and "Fruit Salad" randomly, keeping the game energetic and fast-paced.

Tips:

- Keep it simple: Start with just 2–3 different fruits for younger children.

- Show the young participants what to do by calling out your own fruit name and moving around the circle during the practice round.
- Supervision and safety: Ensure that there's enough space for everyone to move safely and be ready to help prevent any bumps or falls during the energetic running parts of the game.

Alternative activity for adults:

For adult learners, consider activities such as 'Building Towers' or Call and Response Cheers', which promote teamwork, communication and participation in a more appropriate way.

5. 'A Pest, A Disease or Natural Enemy'

Reasons for conducting 'Is it Recall…?' in an FFS **programme**:

- Improving knowledge retention: Recalling information about crop threats (pests, diseases, natural enemies) helps solidify this knowledge in participants' minds;
- Encouraging active learning: Participants actively participate by recalling and discussing their knowledge;
- promotes group discussion: The exercise can lead to discussions and knowledge sharing among participants;
- Identifying knowledge gaps: The activity can help you identify areas where participants might need more information or clarification.

How to conduct 'Is it Recall…?' in an FFS programme:

Materials:

- Whiteboard or flipchart (optional)
- Markers (optional)
- Cards with pictures or descriptions of crop threats (optional – see tips below).

Instructions:

1. **Introduce the activity**: Explain that you'll be testing everyone's knowledge about crop threats.
2. **Present the crops**: There are three ways to do this:
    - Verbal: Simply name different crops grown in your region.
    - Visual: Show pictures or drawings of various crops (on a whiteboard or cards).
    - Written: Write down the names of different crops on the board or cards.
3. **Ask questions**: For each crop, ask the following questions:
    - Is there a major pest that attacks this crop? If so, what is it?
    - Does this crop suffer from any common diseases? If so, what are they?
    - Are there any natural enemies that help control pests for this crop? If so, what are they?
4. **Encourage discussion**: Allow participants to discuss their answers and share their knowledge.
5. **Provide clarification**: If there's any confusion or incorrect information, use this opportunity to clarify and provide accurate information.

Tips:

- Adapt the difficulty: Start with common crops and threats that participants are likely familiar with. You can gradually introduce less common threats as the activity progresses.
- Use cards for variety: If you have access to cards with pictures or descriptions of crop

threats (including pests, diseases and natural enemies), you can use them to make the activity more visually engaging.

- Focus on learning, not competition: This is not a quiz to see who knows the most; it is about everyone learning and sharing knowledge.

Additional notes:

- You can incorporate this activity into a larger lesson on crop protection or pest management
- This activity can be used throughout the FFS programme as a way to review previously learned information.

By using 'Is it Recall…?' in your FFS programme, you can create a dynamic learning environment that encourages active participation and knowledge sharing among participants.

6. Powers of Observation

The Powers of Observation exercise in FFS is not a single, specific activity; rather, it is a concept that can be applied to various team-building exercises that focus on improving observation skills, communication, and collaboration. Here is why it is important and how you can incorporate it into your FFS programme:

Reasons for focusing on Powers of Observation in FFS:

- Enhanced learning: Strong observation skills allow farmers to identify early signs of pest or disease problems, assess crop growth, and make informed decisions about their farming practices.
- Improved communication: Farmers need to effectively communicate their observations to each other, extension workers and researchers.
- Collaborative problem-solving: By sharing and discussing observations, FFS participants can work together to identify problems and develop solutions.

How to conduct Powers of Observation activities:

1. **Find the difference**:
    - Set up two identical stations with various farming-related objects (seeds, tools, plant samples); subtly change one or two objects at one station.
    - Divide participants into teams and give them a limited time to observe both stations.
    - Teams then discuss and list the differences they spotted.
2. **Silent observation walk**:
    - Take the FFS group to a field or designated area.
    - Instruct everyone to silently observe their surroundings for a set time (2–3 minutes).
    - Afterwards, have each participant share one or two interesting observations they made (e.g. types of insects, plant growth variations).
3. **Guess the object**:
    - Have one participant secretly choose a common farming object and describe it to the group only through observation-based clues (e.g. "It has a long handle and metal teeth used for raking").
    - Have the other participants ask clarifying questions (based on observation, not function) to guess the object.

Tips:

- Variety is key: Use a variety of activities to keep participants engaged and challenge their observation skills in different ways.
- Connect to learning: Relate the observation activities to the specific topics covered in your FFS programme.
- Debrief and discuss: After each activity, have a group discussion to highlight the importance of observation and how it can be applied in their farming practices.

By incorporating Powers of Observation activities into your FFS programme, you can equip participants with a valuable skill that will benefit them throughout their farming careers.

They will learn to observe more closely, communicate their findings effectively, and collaborate with others to solve problems based on their observations.

7. 'Spell the Crop'

'Spell the Crop' can be a fun and engaging team-building exercise for FFS focused on younger participants (children of farmers involved in the FFS programme). Here are the reasons and how to conduct it.

Reasons for conducting 'Spell the Crop' for younger learners in FFS

- Learning through play: This activity turns learning letter recognition and spelling into a fun game, making the process more engaging for young children.
- Reinforcing knowledge: By focusing on crop names, it reinforces their knowledge of the crops grown in their region.
- Promotes teamwork: Children work together to spell the crop name, encouraging communication and collaboration.
- Building confidence: Successfully spelling the crop name as a team can boost children's confidence and sense of accomplishment.

How to conduct 'Spell the Crop' for younger learners

Materials:

- Large flashcards or construction paper with clearly written letters (large enough to spell out common crop names grown in your region)
- Masking tape or string to hang the letters (optional).

Instructions:

1. **Prepare the letters**: Write each letter of various crop names on separate flashcards or construction paper pieces. Make the letters large and colourful to capture attention.
2. **Gather the group**: Have the young participants stand or sit in a circle or line, facing outwards.
3. **Explain the game**: Tell them you'll be playing a game where they'll work together to spell the name of a crop.
4. **Show the first letter**: Hold up the first letter of a chosen crop name (e.g. 'C' for corn).
5. **Pass the letters**: Ask who knows what sound the letter makes. If someone knows, have them step forward and take the letter; if no one knows, provide a gentle hint.
6. **Continue the chain**: Repeat steps 4 and 5 for each subsequent letter in the crop name. Encourage the children to call out the letter sound or name as they take their turn.
7. **Spell it out!** Once all the letters are held by participants, they can arrange them in the correct order to spell the crop name.

8. **Celebrate success!** Acknowledge and celebrate the team's success in spelling the crop name.
9. **Repeat and play**: Choose another crop name and repeat the game!

Tips:

- **Start simple**: Begin with short and easy-to-spell crop names.
- **Gradually increase the difficulty**: As the children get comfortable with the game, introduce longer or less common crop names.
- **Move around**: Encourage the children to move around the space as they pass the letters, adding an element of movement to the activity.
- **Make it visual**: Since some children struggle with letter recognition, consider using flashcards with pictures of the crops alongside the letters.

Additional notes:

- You can adapt this activity for adult learners by using more complex agricultural terms instead of crop names; however, for adult FFS groups, other team-building activities such as 'Act or Draw' or 'Building Towers' might be more suitable.

By incorporating 'Spell the Crop' into your FFS programme for younger learners, you can create a fun and educational experience that promotes teamwork and letter recognition, and reinforces their knowledge of crops grown in their region.

8. The 'Catch Cry'

Creating a team cheer or catch cry can be a fun and engaging team-building activity in FFS programmes. Here is why and how to conduct it:

Reasons for developing the 'Catch Cry'

- **Promoting team spirit**: A catchy cheer can create a sense of unity and belonging among FFS participants.
- **Boosting enthusiasm**: A fun cheer can energize the group and create a more positive learning environment.
- **Encouraging creativity and collaboration**: Participants work together to come up with a chant that represents their group
- **Improving memory**: Learning and repeating the catch cry can help participants remember key messages from the FFS programme.

How to conduct the develop the 'Catch Cry' activity

1. **Gather the group**: Have all the FFS participants sit or stand in a circle.
2. **Explain the activity**: Tell them you will be working together to create a unique cheer or chant that represents their FFS group.
3. **Brainstorm ideas**: Ask them to brainstorm words or phrases that capture the essence of farming, learning or teamwork. Write these down on a board or flipchart for everyone to see.
4. **Refine and combine**: Guide the group discussion to refine the ideas and combine them into a short, catchy phrase.
5. **Develop a rhythm**: Encourage participants to clap, stomp or add other rhythmic elements to create a chant-like feel.
6. **Practise and perfect**: Have the group practise the catch cry a few times until everyone feels comfortable with it.

7. **Use it throughout the programme**: Incorporate the catch cry throughout the FFS programme whenever the group starts or ends a session, celebrates a success or needs a boost of energy.

Tips:

- Keep it simple: A shorter catch cry is easier to remember and repeat.
- Incorporate local language: Include words or phrases in the local language to make it more personal and meaningful for the participants.
- Make it fun! Encourage creativity and silliness – the most important thing is for everyone to have fun and enjoy the process.

Examples (adapt to your programme):

- For general FFS: 'Grow strong! Learn together! FFS!'
- For a programme focused on a specific crop: 'Tomatoes high! Yielding strong! We know how they belong!'

Additional notes:

- If time allows, you can take it a step further and create some synchronized movements to accompany the 'Catch Cry'.
- This activity works well at the beginning of an FFS programme to help participants bond and build a sense of community.

By incorporating the 'Catch Cry' into your FFS programme, you can create a more engaging and energetic learning environment that fosters teamwork, collaboration and a sense of belonging among your participants.

9. 'Actions – Seeing, Listening and Doing'

The concept of 'Actions – Seeing, Listening and Doing' in FFS is not a specific team-building exercise, but rather a framework for designing effective activities. Here is how it applies:

Importance of 'Actions – Seeing, Listening and Doing' in FFS:

- Holistic learning: The FFS methodology emphasizes a hands-on learning approach; however, seeing and listening are crucial first steps to effective 'doing'.
- Building knowledge: Participants need to see demonstrations and listen to explanations before actively participating in tasks.
- Developing skills: By observing and listening, participants learn proper techniques before applying them through 'doing' activities.

Incorporating 'Actions – Seeing, Listening and Doing' in team building:

Here's how to design team-building exercises that integrate all three aspects:

1. **Act or Draw (example)**:
    - Seeing: Participants observe their teammate acting out or drawing the word/phrase.
    - Listening: While acting, teammates might provide subtle clues through sounds or body language.
    - Doing: One teammate acts or draws while others interpret and guess the word/phrase.
2. **Building Towers (example)**:
    - Seeing: Participants observe different tower structures built by other teams.
    - Listening: They might discuss strategies or offer suggestions to their teammates.
    - Doing: Teams work together physically to build their tower using the provided materials.

3. **Silent Observation Walk (example)**:
    - Seeing: Participants silently observe their surroundings, focusing on details related to the FFS topic.
    - Listening: While minimal talking is allowed, participants might listen to natural sounds or each other's quiet observations.
    - Doing: After the exercise, they share their observations with the group, leading to discussions and applying their newfound knowledge.

Tips:

- Balance the activities: Ensure a mix of activities that emphasize seeing, listening and doing to cater to different learning styles.
- Debrief and discuss: After each activity, have a group discussion to highlight the importance of 'Actions – Seeing, Listening and Doing' in successful farming practices.
- Connect to learning: Relate the team-building activities to the specific topics covered in your FFS programme.

By incorporating this framework, you can design team-building exercises that are not only fun and engaging, but that also promote a well-rounded learning experience for your FFS participants.

ANNEX 11

Example of a Farmer Field School curriculum for integrated management of the fall armyworm on maize

Week No.	Stages	Activities	Topic	Learning objective	Content
1	Pre-planting	Introductory training on the Fall Army Worm (FAW)	FAW	To create awareness on how to recognize FAW and implement prevention measures	FAW identification, life cycle (biology) and ecology; FAW prevention, scouting and managemnet actions; biological control and cultural control. If already present, collect FAW specimen at different stages (egg masses, larval instars, adult male and female moths), damaged plants, natural enemies, potential local botanical plants, weeds, etc. For observation and discussion. Collect a list of sustainable farming practices and botanicals available, and develop simple factsheets on each and their preparation. Integrate indigenous practices into the reviewed existing lists of pesticides and develop a green list for each site/country.
2	Pre-planting	Farm record-keeping and economic analysis	Farm record-keeping and economic analysis	To know how to keep and analyse field records for planning, management and decision-making	The importance of record-keeping; types of records, and their use; inputs and sales records; costs of production and calculation of gross margins; cost effectiveness of treatments for FAW management.

	Methods	Materials	Time	Responsible Person	Evaluation indicators
	Brainstorming and discussions, whenever possible: visit infested fields/ vegetation, group work, practical demonstration	Flip-chart, markers, masking tape, a knife, plastic bottles/jars; cover with veil to seal them; a magnifier and nets to collect adult moths	4hrs × 2 days	Facilitator/resource person	Feedback on how to recognize, and manage FAW
	Brainstorming, discussions, problem-solving exercises	Flip-chart, markers, masking tape	2hrs	Facilitator	Feedback to know how the analysis of records leads to management decision-making and planning

Week No.	Stages	Activities	Topic	Learning objective	Content
3	Pre-planting	Key studies to conduct in Farmer Field Schools (FFS) Discussions input procurement and sourcing		To identify and select possible studies to be conducted in FFS to know the characteristics of desirable varieties and seed sources, fertilizers or manures, botanical and biological pesticides	The procurement and use of various inputs for prevention measures for managing FAW; the difference between seed and grains; varieties of maize; suitable varieties; FAW-resistant inbred lines; types of fertilizer/ manure. Information on seed/fertilizer packages and labels: raise awareness on seed sources where available; seed/fertilizer rates to source the needed quantity; sermination tests; alternatives to chemicals (Indigenous technical knowledge, IPM); sourcing botanicals and biopesticides; traps and pheromone lures
4	Pre-planting	Site selection	Site identification (In relation to Prevention measures for FAW management)	To be able to identify suitable land for maize production and to prevent infestations including FAW	Criteria for selecting land: awareness on site selection criteria and any differences when setting up FFS studies to avoid bias; characteristics of land suitable for maize production; rainfall pattern; history of the site; awareness on land use; rotation and fallow land; companion cropping, associations, trees, hedges, flowers to enhance habitat for natural enemies; avoiding late and staggered planting to prevent FAW.
5	Pre-planting	Land preparation	Land preparation for cultivation (In relation to Prevention measures for FAW management)	To know the importance of good land preparation and how to do this	Types of equipment for soil type and gradient; role and method of land preparation — different views.

Methods	Materials	Time	Responsible Person	Evaluation indicators
Brainstorming, observations and discussions	Samples of seeds, fertilizers and pesticides (chemicals), flip-charts, markers and masking tape, botanicals, authorized pesticides, traps, pheromones, lures	1–1.5 hrs	Facilitator	Feedback: Be able to list characteristics of good seed, fertilizers, bio-pesticides/ botanicals
Brainstorming, field observations and practice on site identification, and discussions	Fields, water hoe, flip-charts, markers and masking tape	1–2.5 hrs	Facilitator	Feedback: Able to list characteristics of good site / land/ plant diversity for maize with a lower risk of early FAW infestation
Brainstorming, discussions, field visits, and demonstration	Flip-chart, markers, masking tape, field hoe for field visit	2.0 hrs	Facilitator	Feedback: Able to list methods of land clearing and land preparation

Week No.	Stages	Activities	Topic	Learning objective	Content
6	Pre-planting	Seed testing and seed dressing	Determining seed viability and seed dressing	To be able to determine the viability of seed and to dress the seeds	Reasons for carrying out seed germination tests; methods of testing seed germination and interpretation of the results; reasons for dressing seeds; methods of seed dressing; safety precautions.
7		Planting operations (planting, gap filling and thinning)	Planting	To know how to improve maize planting	Time of planting; methods of planting: spacing, depth of planting, seed rate; companion cropping to enhance habitat for natural enemies; plant and preserve host plants for natural enemies (e.g. Crotalaria, flowering plants, *Tithonia diversifolia*, *Tephrosia vogelii*, Pigeon pea); avoiding staggered planting to reduce FAW buildup; varietal mix and intercropping; the importance and method of thinning and gap filling.
8	Seedling	Specific training	Introduction to the FAW (regarding management action to control the FAW)	To create awareness on how to recognize FAW and to take management action to control it	FAW identification, life cycle (biology) and ecology; prevention, scouting and action; bio control and cultural (mechanical) control; collection of existing green list of botanicals and development of simple factsheets on each; integration of indigenous practices into existing pesticide lists and green lists for each country; brainstorming with farmers on risks and pesticide costs.

	Methods	Materials	Time	Responsible Person	Evaluation indicators
	Discussion, practice and observations	Seeds, tissue, water, saucer, seed dressing chemicals, container, flip-charts, markers	1.0 hrs	Facilitator	Feedback: Be able to test germination and to dress seeds
	Brainstorming, discussions and field visits	Flip-chart, markers, masking tape, field for field visit	1.5 hrs	Facilitator	Feedback: Know how to plant, thin and gap fill.
	Brainstorming, discussion, field visit, group work, demonstration	Flip-chart, markers, masking tape	4.0 hrs × 2 days	Facilitator/resource person	Feedback: Know how to recognize and manage FAW.

Week No.	Stages	Activities	Topic	Learning objective	Content
9	Seedling to maturity	Regular field scouting/ monitoring (from seedling to maturity stages)	Crop & FAW management requirements (Management action for FAW)	To identify pests/natural enemies, and any emerging problems for immediate action To assess the effectiveness of the management options undertaken, and keep records To identify problems in the field and with crops To evaluate previous management decisions made	Agro-ecosystem analysis (AESA); stage of growth/development; identify/collect pest, weeds and disease infections, pest infestations, natural enemies and host plants; identify/collect FAW and natural enemies specimen at different stages, damaged plants, potential local botanical plants, weeds, etc. for observation and discussion; assess infestation level: incidence and severity; assess and compare the effectiveness of treatments applied; monitor FAW population; monitor weather effects; assess soil/water/ plant conditions: soil structure, drainage and organic matter.

Methods	Materials	Time	Responsible Person	Evaluation indicators
Brainstorming, group discussions and field practical	Flip-chart, markers, masking tape, field for field practice, knife, plastic bottles/jars, nets, vials, magnifiers, etc.	2–3 hrs/session	Facilitator	Feedback: Know how to manage the main pests and diseases.

Week No.	Stages	Activities	Topic	Learning objective	Content
10	Seedling - vegetative to flowering	Pest and diseases management	FAW and other pest and disease management	To understand the appropriate methods and timing of managing FAW and other pests and diseases	The importance of managing pest and diseases and FAW in the context of the farmers' traditional systems and in the context of sustainable soil and water management practices (especially conservation agriculture); types, damage signs and characteristics of the different pests and diseases in maize; methods of managing pests and diseases — integrated pest management (IPM); use of Indigneous technical knowledge; farmer practices; biocontrol and cultural (physical) control; physical hand picking and crashing egg masses and larvae; testing the use of sand and ash to control the early instars; use of biopesticides/botanicals, botanicals preparation and handling; risks; collecting dead larvae, making a homemade biopesticide by blending, straining and diluting the larvae dead from pathogens; action thresholds and cultural practices; moisture control practices; termite control (cultural practices including use of neem extract – leaves/seed).

Methods	Materials	Time	Responsible Person	Evaluation indicators
Brainstorming, group discussions and field practical	Flip-chart, markers, masking tape, field for field practice, (bio) pesticides application equipment	2–3 hrs/session (multiple times)	Facilitator	Feedback: Know how to manage the main pest and diseases.

Week No.	Stages	Activities	Topic	Learning objective	Content
11	Seedling to vegetative	Soil health and fertilizer application	Soil fertility and moisture management	To understand soil health. To be able to correctly apply basal fertilizer	Concept of soil health; Soil characteristics: composition, texture, structure, water holding capacity, etc.; the importance of organic matter; Composting, manure; Types of organic and in-organic fertilizers and their characteristics; Sources of fertilizers; Methods, rates and timing of application; Basal and top dressing; Organic and inorganic fertilizers; Suitable rate for nitrogen fertilizer.
12	Vegetative	Weeding	Weed Management	To be able to manage weeds	Importance of weeding; methods and timing of weeding (weeding before reproductive stage); characteristics of different weeds; safety precautions.
13	Cobbling & Maturity	See Nos. 9 and 10	Regular field monitoring	To monitor, identify and solve problems in the field/crop	(Refer to the contents of week 9 and 10)
14		Harvesting	Harvesting: physiological maturity	To determine the appropriate time for harvesting	Signs and characteristics of maturity; when and how to harvest; reducing harvesting losses; good management of crop residues (destroy egg masses); identification and discarding of infected ears
15		Post harvesting/ processing	Post-harvest handling	To learn about proper methods of post-harvest handling and processing	Minimizing post-harvest losses (quality and quantity); dehusking/ drying; shelling/drying; winnowing; sorting/grading/ bagging, when/if needed.

	Methods	Materials	Time	Responsible Person	Evaluation indicators
	Brainstorming, discussions and field practical	Flip-chart, markers, masking tape, field for field practice, material for soil health exercises	3.0 hrs/session (multiple times)	Facilitator	Feedback: Know how to manage soil fertility.
	Brainstorming, discussions and field practical	Flip-chart, markers, masking tape, field for field practice	1.5 hrs	Facilitator	Feedback: Know how to control weeds.
	Group discussion and field practice	Field with mature crop	1.0 hr	Facilitator	Feedback: Know when and how to harvest
	Presentation, group discussions and field practice	Flip-chart, markers, masking tape, grains, examples, processing tools/ equipment	1.5 hrs	Facilitator	Feedback: Know about proper methods of post-harvest handling and processing.

Week No.	Stages	Activities	Topic	Learning objective	Content	
16		Storage	Minimizing losses during storage	To be able to minimize losses during storage	The importance of good storage; determining proper moisture content of grains; storage methods; seed storage methods; causes of losses; storage pests and diseases and their management; fumigation chemicals.	
17		Economic analysis	Farm record-keeping and economic analysis	To learn how to analyse records for management decision-making	The importance of record-keeping; cost-benefit analysis; economic benefit of the treatments – comparisons; cost of production and gross margins.	

	Methods	Materials	Time	Responsible Person	Evaluation indicators
	Presentation, group discussions and field practice	Flip-chart, markers, masking tape, grains in store, examples of chemicals	2.0 hrs	Facilitator	Feedback: Know how to store their grains and to manage storage pests.
	Brainstorming, discussion	Flip-chart, markers, masking tape	1.5 hrs	Facilitator	Feedback: Know how to keep and use farm records.

Important: *No. 10 is carried out according to the decision made (No.9).*

Source: FAO. 2018. *Integrated Management of the Fall Armyworm on Maize. A guide for farmer field schools in Africa*. Rome.

A facilitator's guide for Farmer Field Schools in Solomon Islands

The Solomon Islands' agricultural sector holds significant potential to drive economic growth and national food security. By addressing current challenges and leveraging available opportunities, the country can transform its agricultural sector into a powerful engine for development.

This guide was commissioned by the Food and Agriculture Organization of the United Nations (FAO) under the Capacity Building Related to Multilateral Environmental Agreements in African, Caribbean and Pacific Countries Phase III programme (ACP MEAs 3), funded by the European Union. As part of ACP MEAs 3, field activities were carried out in the Solomon Islands to mainstream biodiversity into the agricultural sector.

At the heart of this guide is the Farmer Field Schools (FFSs) approach a participatory method where farmers engage directly in experimenting with new techniques, analysing results and sharing experiences with peers in their fields. This comprehensive guide, the first of its kind in the Pacific region, equips facilitators in Solomon Islands to conduct impactful FFSs focused on integrated pest management (IPM) practices. It is designed for empowering extension staff, non-governmental organization (NGO) personnel and experienced farmers to become skilled facilitators. The guide goes beyond a simple curriculum, offering a detailed framework for planning, implementing, evaluating and even following up on FFS programmes.

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