Pacific Horticultural & Agricultural Market Access Plus Program

Supported by Australia & New Zealand

Beekeeping Revival in Simbo: Sector Feasibility and Training Impact Report

July 2025 | Simbo Island
Western Province, Solomon Islands

Australian Aid

NEW ZEALAND FOREIGN AFFAIRS & TRADE
Manatū Aorere

Beekeeping Revival in Simbo: Sector Feasibility and Training Impact Report

Client: Department of Foreign Affairs and Trade

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The author expresses his sincere gratitude to the donor partners for their unwavering support. This dedication to helping rural communities build capacity in agriculture is deeply appreciated.

Special thanks to the PHAMA Plus Program offices in Honiara and Fiji for their continuous support throughout the planning, implementation, and delivery of this work to revitalise the honey industry in Simbo. Their professionalism and commitment to excellence were instrumental in making this program a success.

Having such committed partners who share our vision of empowering communities to thrive is both humbling and inspiring.

Acronyms

ACIAR	Australian Centre for International Agricultural Research
FFT	Family Farm Team
GEDSI	Gender Equality, Disability and Social Inclusion
GWIB	Gizo Women in Business
IPM	Integrated Pest Management
MAL	Ministry of Agriculture and Livestock
NGO	Non-Government Organisation
PHAMA Plus	Pacific Horticultural and Agricultural Market Access Plus Program
RDP	Rural Development Program
SISBEC	Solomon Islands Small Business Enterprise Centre

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Executive Summary

Beekeeping for honey production is an appropriate and sustainable income generating activity in the Solomon Islands, with proven potential for growth. Since its introduction in the 1950s, the country has a history of good honey production and it offers significant opportunities for smallholder farmers and economic development, without exacerbating environmental degradation.

The honey industry in Simbo, Western Province, has significant growth potential but faces threats from pests, poor hive practices, weak capacity and equipment shortages. In 2024, the Australia and New Zealand supported Pacific Horticultural and Agricultural Market Access Plus (PHAMA Plus) Program signed a partnership agreement with Gizo Women in Business (GWIB), to support the revitalisation of the honey industry in Simbo.

In March 2025, PHAMA Plus carried out a feasibility study that confirmed the issues facing the honey industry. Based on the recommendations from the feasibility study, in April 2025, PHAMA Plus and GWIB delivered a targeted training for women, men and youth in hive management, varroa control, and colony expansion. Early results show strong knowledge uptake, renewed motivation, and potential to scale production sustainably. Strategic follow-up, support, and infrastructure development are required to sustain growth.

1 Introduction

The beekeeping industry is crucial for enabling economically marginalised groups, such as the landless, the poor, those facing financial difficulties, and rural women and youth, to access income without exacerbating environmental and land tenure problems. Honeybees have great potential to be developed as a smallholder niche industry with low input costs and the ability to scale, to help those facing financial challenges scale up quickly[1].

In the Pacific Islands, the beekeeping industry is threatened by limited technical beekeeping skills, inefficient queen breeding programs, increasing pests and diseases and quality control issues related to harvesting and post-harvest handling. These threats pose significant risks to the vulnerability of smallholder beekeeping enterprises, while also posing biosecurity threats[2].

The honey industry in the Solomon Islands has significant potential for economic growth and environmental sustainability. The nation's favourable climate and rich biodiversity make it an ideal location for beekeeping, which can enhance agricultural productivity, support livelihoods, and help maintain ecological balance. However, beekeeping and honey production in the country have been in decline for the past 40 years, both in terms of overall production and participation rates, keeping it to a "cottage industry" where current production is still unable to meet the high local demand[3].

In 2024, the Australia and New Zealand supported Pacific Horticultural and Agricultural Market Access Plus (PHAMA Plus) Program signed a partnership agreement with Gizo Women in Business (GWIB), to support the revitalisation of the honey indutry in Simbo, Western Province. This report combines feasibility analysis with training outcomes to guide future investments and program design. Key stakeholders include Pacific Horticultural and Agricultural Market Access Plus (PHAMA Plus) Program, Gizo Women in Business (GWIB), Solomon Islands Small Business Enterprise Centre (SISBEC), Ministry of Agriculture and Livestock (MAL), Biosecurity Solomon Islands (BSI), Western Provincial Government and rural beekeepers and community leaders on Simbo Island in Western Province.

2 Sector Overview – Beekeeping in Simbo

Simbo Island, located in the Western Province of Solomon Islands, has a rich history of honey production, even when the sector remains informal and subsistence-based. However, beekeeping and honey production in Simbo have experienced significant fluctuations over the past decades due to various challenges and revitalisation efforts. In the 1990s, Simbo contributed to helping the Solomon Islands produce approximately 140 tonnes of honey annually, which declined dramatically to about 4 tonnes per year by 2018[4]. Beekeeping is currently declining and has unrealised potential in Simbo. Beekeeping faces major challenges with declining productivity and participation among smallholder beekeepers on the island.

The beekeeping industry on Simbo Island is experiencing significant declines in hive numbers and honey production[5]. The key constraints to the sector in Simbo are poor hive management and problems associated with Asian honeybees, which were first detected in the Solomon Islands in 2003. Simbo beekeepers shared testimonials on the collapse of their honey production when the Asian honey bee (*Apis cerana javana* – Indonesian haplotype) arrived on the island. Findings support this during the

[1] *Schouten, C, Lloyd, D, Somerville, D & Roberts, J, (2019). Novel Approaches for Increasing Participation in the Honeybee Industries of the Pacific.*
[2] *Schouten, C, Lloyd, D, Somerville, D & Roberts, J, (2019). Novel Approaches for Increasing Participation in the Honeybee Industries of the Pacific.*
[3] *Schouten, C, Lloyd, D, Somerville, D & Roberts, J, (2019). Novel Approaches for Increasing Participation in the Honeybee Industries of the Pacific.*
[4] *Schouten, C, Lloyd, D, Somerville, D & Roberts, J, (2019). Novel Approaches for Increasing Participation in the Honeybee Industries of the Pacific.*
[5] *Schouten, C. (2023). ACIAR LS/2014/42 Solomon Islands Exit Report.*

Australian Centre for International Agricultural Research (ACIAR)'s consultations with beekeepers in the Solomon Islands, which identified that the overriding issue affecting production was the invasion of the Asian honey bee (*Apis cerana*)[6].

Limited access to beekeeping tools and equipment, a lack of extension services, poor beekeeper networking, and inbreeding of the honey bee stocks have all contributed to poor colony health and productivity on Simbo Island. Competition for floral resources by Asian honey bees, which was initially thought to be the most serious constraint to Simbo beekeeping, is still a major issue despite the development of management methods for controlling Asian honeybees. Beekeepers in Simbo need to be trained in implementing these new methods, and a queen-breeding program will need to be implemented to improve genetic diversity and productivity in beehives. There is also a need for access to information regarding floral resources and flowering times to help local beekeepers understand and adjust their hive management to fit with seasonal nutritional surpluses and/or deficits. This may help prompt hive movements to exploit various floral resources available at different times of the year across Simbo Island.

There is no large-scale commercial production of queen bees in the Solomon Islands, including Simbo Island. This limits the chance to optimise honey yields, reduce pest and disease pressures, and potentially expand the industry. Smallholder beekeepers in Simbo highlighted the importance of developing and maintaining a small queen rearing program to supply queen bees to beekeepers on the islands and in Western Province.

While specific current production figures for Simbo Island are not detailed in the available sources, the renewed focus on beekeeping through some projects indicates a positive trajectory for the industry[7]. For instance, beekeeping and honey production on Simbo Island continues to grow, supported by programs like PHAMA Plus. This initiative has been pivotal in providing Simbo beekeepers with the knowledge to improve hive management, disease control, and honey production. The program has also focused on enhancing honey quality and improving Simbo's honey marketing strategies. By encouraging the formation of cooperatives among beekeepers, PHAMA Plus is helping to increase collective bargaining power and facilitate better market access. These efforts contribute to local livelihoods and support the potential for industry growth. However, challenges such as pests, climate change, and competition from invasive species persist, requiring continued support and innovation.
Beekeeping and honey production in Simbo also received support from other organisations. For example, since 2018, SISBEC has significantly improved beekeeping practices on Simbo Island. SISBEC trained 15 new beekeepers and introduced 45 new beehives while providing tools, equipment, and personal protective gear. In addition to technical training in beekeeping, the program included business management training, which has helped beekeepers ensure sustainable honey production[8].

A success story from Simbo is some improvement in the capability of beekeepers to manage pests, such as the Varroa mite and the invasive *Apis cerana* bee, which should help mitiage the impact on honey production. This has been through collaborative efforts from Simbo's beekeepers, PHAMA Plus, and GWIB and ongoing efforts and resourcing are needed.

Awareness of good beekeeping practices in Simbo is steadily growing. However, further expansion of training programs and ongoing engagement with experts could accelerate the widespread adoption of these practices across the Island.

[6] *Schouten, C, Lloyd, D, Somerville, D & Roberts, J, (2019). Novel Approaches for Increasing Participation in the Honeybee Industries of the Pacific*
[7] *Schouten, C, Lloyd, D, Somerville, D & Roberts, J, (2019). Novel Approaches for Increasing Participation in the Honeybee Industries of the Pacific*.
[8] *Pagepitu, A, 2017.Honey Bee Keeping Business Training ends, Island Sun*

3 Feasibility Assessment

3.1 Availability of Beekeeping Equipment and Advisory Services

Essential beekeeping equipment and advisory services in Simbo are not readily accessible, in part due to the island's remote location. However, this has significantly improved, and both local and international stakeholders support it. MAL has revitalised honey production by providing resources and creating capacity building opportunities. International partners, such as ACIAR and the University of Queensland, have provided support through specialised research and hands-on workshops[9].

Locally, SISBEC, PHAMA Plus and the Rural Development Program (RDP) have provided critical equipment, including beehives, beeswax, tools, and protective gear, ensuring that beekeepers in Simbo have the necessary resources for successful honey production. The revival of the Solomon Islands Honey Cooperation Society, which collapsed in 2000, is another positive development, as it promises to provide beekeepers with essential supplies and to further strengthen the beekeeping infrastructure[10].

3.2 Engagement of Simbo Beekeepers with the National Honey Industry

Simbo beekeepers have been actively engaged with national organisations like MAL and various non-governmental organisations (NGOs), which have facilitated training, funding, and capacity building for beekeepers across the Solomon Islands. One of Simbo's most notable achievements is the organic certification of its honey in 2017, making it the first island in the country to achieve this distinction.

These engagements have also helped local honey access international markets, increasing its global visibility and demand. Furthermore, the revival of the Solomon Islands Honey Cooperation Society signals a commitment to strengthening both local and international market links for honey producers.

3.3 Challenges

Despite progress, several challenges remain for beekeepers and honey producers in Simbo. Some of these include the following:

- **Limited Knowledge and Skills**: Many local beekeepers lack access to formal training in modern beekeeping techniques, pest management, and hive care, leading to lower honey yields. There are no trained queen bee breeders in Simbo.
- **Pest and Disease Management:** The Varroa mite continues to threaten honeybee populations, and beekeepers need better resources and knowledge to manage pests effectively to ensure honey production can increase and the industry become financially viable over time.
- **Quality Control:** The lack of standardised processes for honey production leads to inconsistent product quality, which affects marketability.
- **Market Access:** Poor infrastructure and logistical challenges due to Simbo's remoteness hamper beekeepers' ability to access larger markets locally and internationally.
- **Financial Barriers:** Many small-scale beekeepers struggle to obtain the necessary funds for business expansion and technological upgrades.

[9] *Ministry of Agriculture and Livestock, 2024.Bee farmers alerted on Varroa Mite Infestation, Solomon Star*
[10] *Osifelo, E.2025.Boost for Honey Industry, Solomon Star*

- **Climate Change:** Changing weather patterns affect the availability of food sources for bees, disrupting honey production.

3.4 Recommendations

Addressing the challenges in the honey industry requires collaborative efforts from government agencies, NGOs, and local beekeepers. Key recommendations based on the feasibility assessment are given below. Some of these were progressed in the subsequent training program (see section 4) and they are incorporated into the overall recommendations of these inputs (see section 6).

- **Training Programs**: Expanding access to formal training in modern beekeeping practices and pest management.
- **Pest Management**: Providing more resources (advisory and equipment/consumables) for effectively managing pests like the Varroa mite.
- **Quality Standards:** Developing and implementing quality control measures to ensure consistent honey production.
- **Infrastructure Improvement:** Enhancing transportation networks to improve market access.
- **Research and Development**: Conducting research tailored to local bee species and environmental conditions to optimise honey production.
- **Environmental Sustainability:** Promoting practices that protect local ecosystems and ensure the health of honeybee populations.
- **Cooperative Strengthening**: Building stronger cooperative structures to improve marketing and bargaining power for local beekeepers and strengthen financial viability through better economies of scale for remote industries.

4 Training Program Overview

Following the recommendations of the feasibility study, a targeted week-long bee-keeping training was conducted by the PHAMA Plus Program and its partner, GWIB, for rural bee-keepers on Simbo Island in April 2025. The delivery mode of the training was in local dialects and designed as practical-focused learning. The training curriculum included: Hive setup and management; Queen grafting and splitting; Varroa mite identification and integrated pest management (IPM) and Harvesting and packaging best practices. The theory component of the training was conducted at Centenary Hall, at Lengana Village, Simbo while the practical component was carried out in the nearby apiary. A total of 40 people (10 women, 30 men) attended the training. Participants were from surrounding villages. Participants walked to the venue about 15 - 30 minutes and travel by boat each morning and return after the sessions in the evening. The facilitator/trainer, PHAMA Plus Gender Equality, Disability and Social Inclusion (GEDSI) Officer and Senior Biosecurity Officer from MAL were based in Lengana village for the duration of the training.

Lengana village was selected especially for the practical component of the training because it is where most of the beehives are located for expansion of the local honey industry.

Some features of the training location and the context are as follows:

- It is a close-knit community consisting of about 20 households belonging to extended family members. The total population is approximately 100 people.
- Lengana is in central location and is in walking or boat ride distance for communities such as Masuru, Tuku and Nusa Simbo.

- The community includes people from Simbo and few other people from other islands in Western Province who came for work as nurses, teachers and church ministers as well as through inter-island marriages.
- GWIB founders, Esther and Stephen Suti, developed the partnership with the PHAMA Plus Program. Esther Suti, is a direct descendant of the original landowner family and her husband Stephen Suti from Malaita. This is primarily due to Simbo society being matrilineal, Stephen Suti is recognised as a leader through his wife. The GWIB was developed to support rural communities in Simbo. It is made up of about 100 women from Simbo and other nearby islands like Ranogga, Kolombangara and North New Georgia (Munda and Vona Vona lagoon).
- Since the introduction of the Asian honey bee (Apis cerana) in 2020, all local bee colonies were lost. In 2024, PHAMA Plus reintroduced 20 new bee colonies (nucs) sourced from the Ulawa Islands in Makira Province.
- As these colonies grow stronger and more established, they will be split and distributed to community members to help them start their own hives.
- This partnership aimed to revive beekeeping and honey production on Simbo Island. Further support will be needed to build the industry towards sustainable, commercial viability.

4.1 Training Objectives

There were 4 key training objectives:

i. Equip local women, men and youth with practical knowledge and skills to start and manage their own hives for honey production.
ii. Improve pest management skills, particularly in identifying, managing, and controlling varroa mite infestations.
iii. Promote colony expansion by teaching splitting and multiplication techniques.
iv. Revitalise local beekeeping and restore honey production on Simbo Island.

4.2 Training Methodology

The training was delivered using a variety of methods, including **lectures, group activities, role plays**, and **hands-on practical sessions**.

The first session focused on identifying the participants' levels of experience by having them share their personal beekeeping stories. The structured content included the following topics:

i. Basic beekeeping techniques.
ii. Understanding a beehive and its components.
iii. Honey production, harvesting, and packaging.
iv. Queen grafting and hive splitting.
v. Common diseases and pests in beehives.
vi. Identifying and managing **varroa mite infestations.**
vii. **Integrated Pest Management (IPM)** strategies for varroa mite control.

4.3 Outcomes and Impact

This was the first formal training for many of the participants despite already owning hives. There was strong interest from women, men and youth, fostering inclusive community development. Based on testimonials from participants, the training strengthened their confidence and technical ability (e.g.,

grafting, mite control) in beekeeping. They stated that they were ready to expand hives using the PHAMA Plus-supplied colonies. They commended that the training was delivered in their local dialect – removing communication barriers which could have affected their understanding of the key messages delivered by the trainer/facilitator.

A total of 10 women and 30 men participated in the training across the 5 day program. With participants coming from the villages of Bulolo, Lengana, Masuru, Tuku and Nusa Simbo and a representative from MAL Biosecurity and PHAMA Plus. An estimated 9 youth (3 female, 6 male) participated in the training (age was not recorded in participant lists). GWIB is made up of women members however in practice, due to sociocultural norms, it was the husbands (and some sons) of some of the women members who attended the training. On the basis that they were attending on behalf of their wives and families and would then bring back the skills and knowledge they learnt to their families for sharing and putting into pratice. This is an important consideration for how future training activities are planned and delivered including for how women (married, single or widowed; already active in training type activities or not) can participate and be empowered with the knowledge. e.g. suitable locations, timing and styles of delivery for the training; having joint and/or separate sessions for women and men; participation of male and female youth.

It was evident through these inputs and the post-training discussions (through PHAMA Plus monitoring work) that the group/beekeeping communities are keen to work with outside partners to sustain the industry and put into practice the learnings. Further support with development programs would be valued and would be enhanced by strengthened relationship with, and support from, relevant government ministries.

4.4 Practical Training Highlights

During the week-long training, the participants complemented their theoretical learnings with hands-on activities, including:

- Identifying different bee types: queen, worker bee and drone bee.
- Observing food sources brought into the hive including nectar and pollen.
- Recognising hive components for instance brood box, honey super and frames.
- Spotting different life stages of bees such as egg, larva and pupa.
- Assessing hive entrance activity to detect issues.
- Practicing queen grafting by inserting eggs into plastic queen cells.

4.5 Participant Feedback

The participants were invited to share feedback on what they had learned. They shared the following:

- Many participants **owned hives** but had never received **formal training**. From the training, they realised that beekeeping is more complex and technical than they had previously believed.
- Those with some experience learned **new techniques** for identifying and managing **varroa mite**, gaining confidence in treating their colonies.
- Participants appreciated that the training was delivered in **local dialect and Solomon Islands pidgin**, making the concepts accessible and easy to understand.
- One participant stated that if he had received this training earlier, he would have expanded his colony from **2 hives to at least 10**.
- Although the training was intended for women, **men also attended** and expressed appreciation for the opportunity.
- The training was inclusive in terms of **gender and age range**.
- The **practical session** on the final day was especially valued by visual and hands-on learners.

4.6 Next Steps

- Future programs should continue to combine theory with practical components.
- Training delivery in local language is highly effective.
- Ongoing support is essential for participants to apply their new skills, especially in pest management and colony expansion.
- Involvement of men and women and youth in community-level training is effective to ensure inclusive participation and development of skills and approaches for sustainable beekeeping and honey production and trade.
- Consider establishing a mentorship or follow-up program to monitor progress and provide further guidance.
- Building a commercial enterprise from beekeeping requires inclusive household decision-making and planning practices. An initiative such as Family Farm Teams (FFT)[11], which supports families to better share decision-making and to set family goals and to plan their farming activities to meet these goals, and move from subsistence towards more semi-commercial production, could support these changes and improve consistency and quality of supply.
- Support is needed to establish a queen bee breeding program.

5 Integrated Analysis – Feasibility Meets Action

The training addressed some of the key recommendations put forward by the feasibility report including but not limited to: addressing skill gaps in hive care and pest control, motivation and technical capacity to expand hives, and community engagement.

However, some of the critical remaining needs are still unmet. These include: implementing a queen bee breeding program, hive movement strategies tied to flowering patterns, improved transport/logistics infrastructure (e.g. to facilitate access to inputs and supply of honey to domestic markets), and standardised honey quality control systems in Simbo.

6 Strategic Recommendations

6.1 Short Term (6–12 months):

- Conduct follow-up support and mentorship for new beekeepers including peer support (particularly women) to share learnings and experiences.
- Monitor hive performance and training impact.
- Expand access to beekeeping tools and resources (advisory and equipment/consumables) for effectively managing pests.

[11] *The Family Farm Teams (FFT) program supports semi-subsistence farming families in the Pacific to develop sustainable livelihoods. The program focuses on building on the individual and family agricultural and cultural strengths to enable families to work in an equitable and effective way to develop their family farm. The program was developed by the University of Canberra, with support from ACIAR in Papua New Guinea and is now being used across the Pacific, including in the Solomon Islands. PHAMA Plus has implemented FFT in Fiji, PNG, Samoa, Solomon Islands and Tonga.*

6.2 Medium Term (1–3 years):

- Launch community-based queen bee breeding.
- Build small processing/packaging units and establish suitable quality controls to ensure consistent honey production. Train women and men in quality control and assurance procedures.
- Strengthen GWIB's (and similar groups) role in marketing and aggregation of honey including through support to build underlying business development skills.
- Implement business management support and provide beekeeping households with FFT training to build inclusive and shared decision-making practices and more commercial beekeeping operations.
- Expand access to formal training and promoting good practices in modern beekeeping practices and pest management that protect local ecosystems and ensure the health of honeybee populations.

6.3 Long Term:

- Establish Simbo as a honey hub with branding (e.g. organic, climate-resilient).
- Integrate honey production into provincial economic development strategy.
- Enhance transportation networks to improve market access.
- Conduct research tailored to local bee species and environmental conditions to optimise honey production.

7 Conclusion

Simbo's honey industry has made significant progress, driven by programs like PHAMA Plus and ongoing support from government and NGOs. As beekeepers adapt to challenges and leverage available support, the honey industry is poised for sustainable growth. With a focus on sustainable practices, quality improvement, and market access, the industry can thrive, benefiting local economies and the environment in the Solomon Islands.

This report outlined the progress, challenges, and recommendations for the Solomon Islands honey industry, focusing on Simbo Island's beekeeping sector and the findings of the inputs provided there under this project. The continued support from local and international stakeholders will position the industry for long-term success.

The training was received very positively. Participants expressed enthusiasm about applying their new knowledge and recognised the value it would bring to their livelihoods.

The **hands-on session** was a highlight, reinforcing key learning outcomes. One participant noted that if he had received such training earlier, his practices and results in beekeeping would have been significantly better.

Now **equipped with knowledge and skills**, participants felt confident in addressing the challenges posed by **Asian honey bees (***Apis cerana***)** and **varroa mites (***Varroa jacobsoni***)**, which had previously devastated Simbo's bee population.

With **continued support from relevant stakeholders**, the community is optimistic about reviving and growing honey production to previous levels.

The April 2025 training has reignited hope and momentum in Simbo's honey industry. With the right investments in training, infrastructure, and cooperative systems, Simbo can reclaim its role as a major honey producer and empower women, youth, and families economically and ecologically.

Annexes

Annex 1: Photos from training

Theory Sessions

Practical Sessions

Participants

Annex 2: Training Program

PHAMA-PLUS HONEY BEE TRAINING WORKPLAN

GIZO WOMEN IN BUSINESS HONEY BEE TRAINING SUPPORTED BY PHAMAPLUS PROGRAM

21st April -25th April 2025

(5 Days Training)

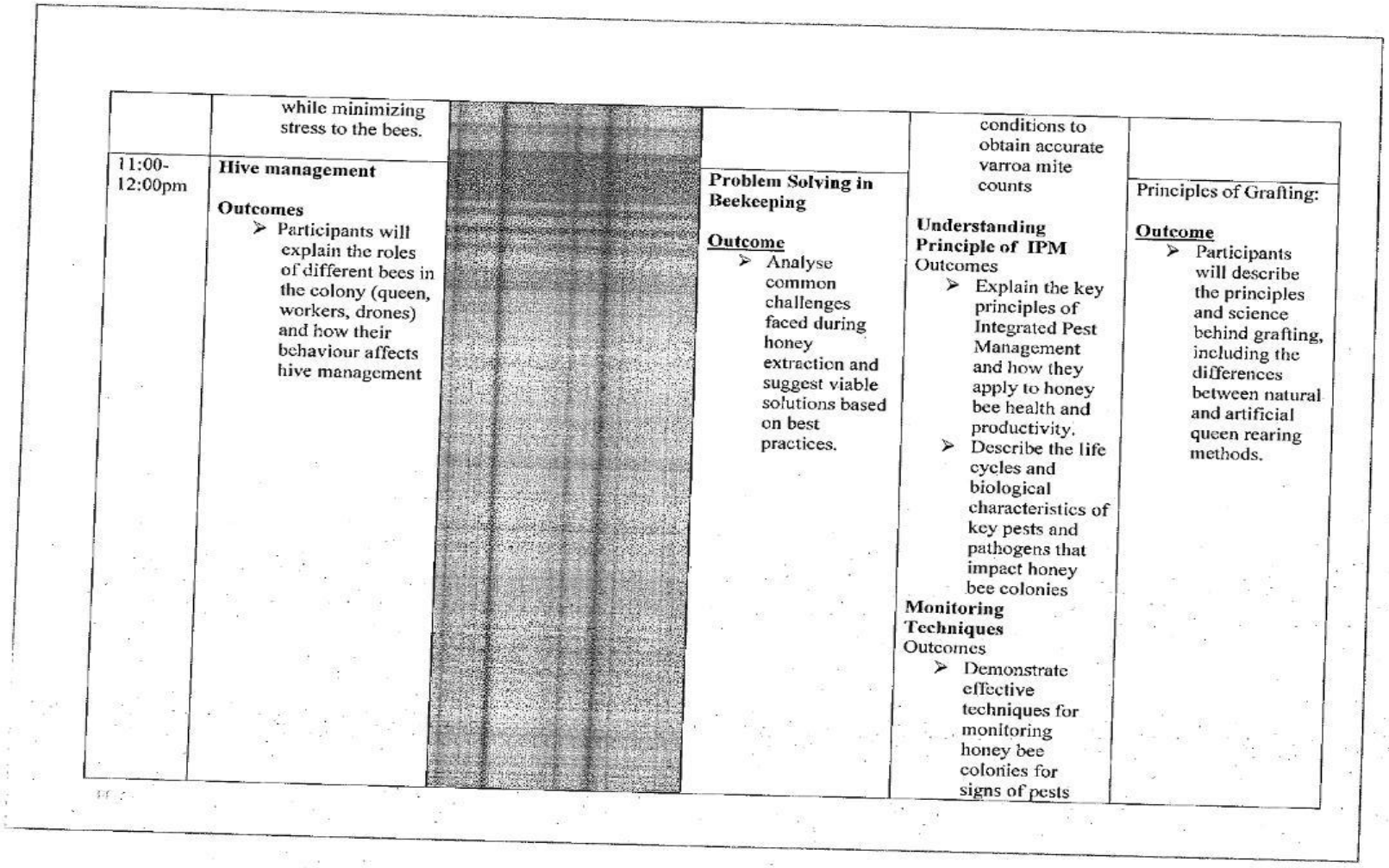
Lengana Village, Simbo Island, Western Province

Week 1 Schedule, Date: 21th April -25 th April 2025

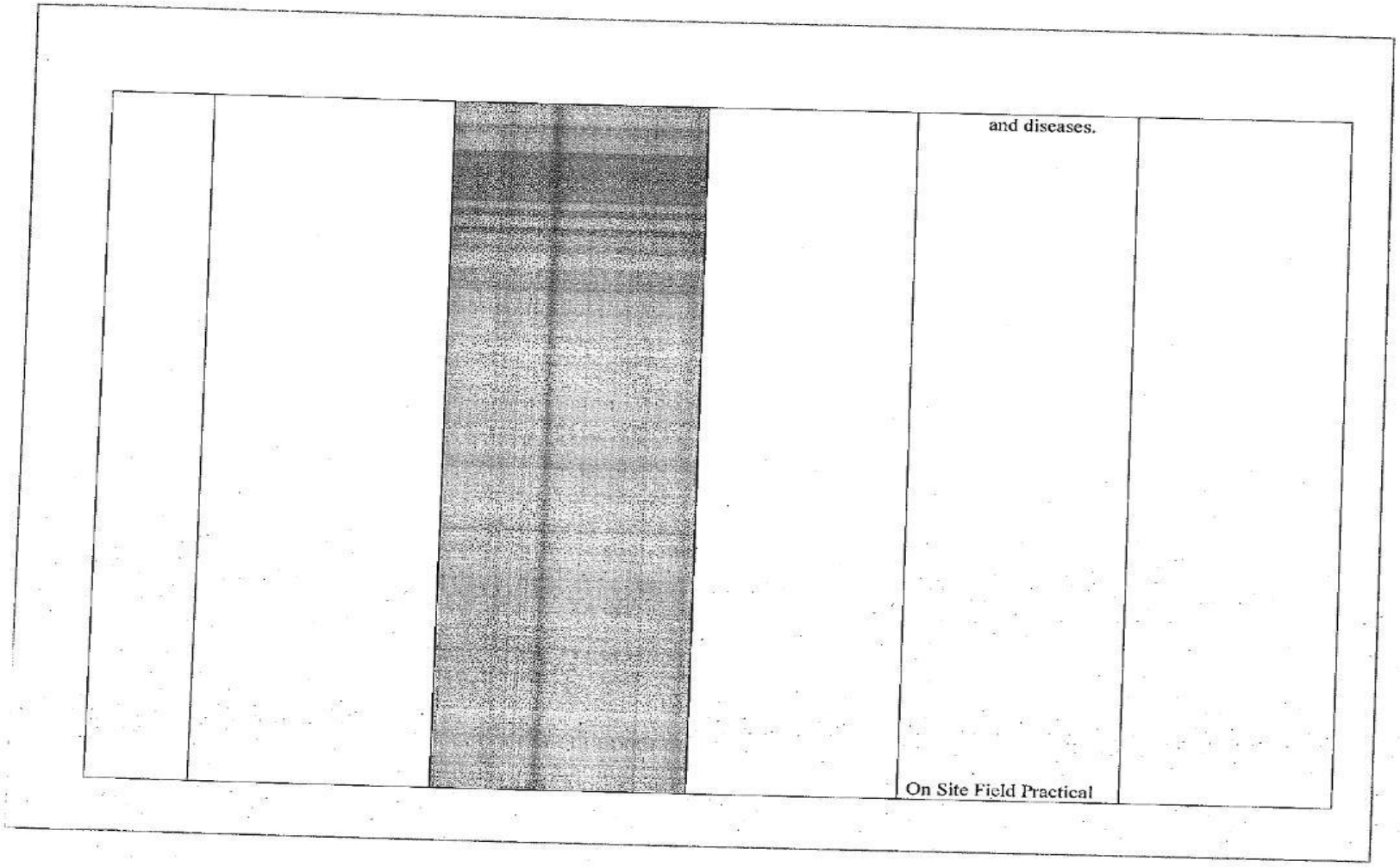
Time	Monday (21/04/2025)	*Tuesday* (22/04/2025)	*Wednesday* (23/04/2025)	*Thursday* (24/04/2025)	*Friday* (25/04/2025)
8:00am-9:00am	➢ Participants assemble ➢ Words of prayer ➢ Words of welcome ➢ Self-introduction ➢ Introducing of weeks programme with aims and objectives ➢ Share Testimonies of Beekeeping in Simbo **Outcome** ➢ Encourage participants to settle down and concentrate ➢ Gain knowledge	➢ Participants arrive ➢ Introduction of the days training programme **Outcome** ➢ Settle down and gain understanding of the day's activities	➢ Participants arrive ➢ Introduction of the days training programme **Outcome** ➢ Settle down and gain understanding of the day's activities	➢ Participants arrive ➢ Introduction of the days training programme **Outcome** ➢ Settle down and gain understanding of the day's activities	➢ Participants arrive ➢ Introduction of the days training programme **Outcome** ➢ Settle down and gain understanding of the day's activities

	and understanding of the important of the weeks training				
9:00am - 10:00am	**Bee Species and Autonomy** ➢ Honey bees ➢ Bumblebee ➢ Solitary bees Decision making ➢ solitary bees ➢ Foraging Behaviour ➢ Nest site selection ➢ Communicate **Outcome** ➢ To have a thorough knowledge and skills on identification of bee species, bee behaviour and ecology importance	**Provincial Biosecurity officer to deliver presentation** **Outcomes** ➢ Explain the importance of biosecurity in the honey bee industry. ➢ Recognize common pests, pathogens, and diseases (e.g., Varroa destructor, American foulbrood, Nosema) that threaten honey bee colonies. ➢ Know the legal requirements and industry standards related to biosecurity measures at local, national, and international levels. **Public Engagement and Community Preparedness**	**Honey Extraction** ➢ Quality Assessment **Outcome** ➢ conduct sensory evaluations of honey, assessing its color, viscosity, aroma, and flavour for quality assurance.	**Bee Pest /Queen grafting** ➢ Identification of Honey Bee Pest **Outcome** ➢ identify common honey bee pests, including Varroa mites, wax moths, and small hive beetles, and understand their life cycles and impacts on bee colonies. ➢ Participants will gain hands-on experience in inspecting hives for signs of pest infestations or diseases and will learn to assess the overall health of the colony.	**Queen Grafting and Practical** **Outcome** ➢ Participants will explain the life cycle of honey bees with a focus on queen bees, including their role within the colony and the importance of queen bees for colony health and productivity.
10:00-11:00	**Hive Management** **Basic Hive components**		**Sustainable Practices** **Outcomes**	**Disease Recognition** **Outcome**	**Queen Bee Biology Practical** **Outcomes**

	Outcomes ➢ Participants will be able to identify and describe the main components of a beehive, including frames, supers, brood boxes, and foundation, and appreciate their functions. ➢ Participants will be able to identify common pests and diseases affecting honey bee colonies and describe appropriate management strategies to mitigate these issues. ➢ Perform a proper hive inspection to assess the health of the colony, identify problems, and take appropriate action. ➢ Demonstrate techniques for safely and effectively harvesting honey from a bee hive	➢ Importance of educating the public about biosecurity risks and preventive measures. ➢ Community resilience programs to prepare for biological threats. ➢ Strategies for effective communication during health emergencies.	Participants will reflect on sustainable beekeeping practices, discussing how to minimize environmental impact and promote bee health during the extraction process	➢ Recognize signs of common diseases affecting honey bees. **Introduction to Varo mite and Biology** Outcomes ➢ Discuss how Varroa mites affect honey bee health and behavior. ➢ Identify the diseases associated with Varroa mite infestations and their impacts on bee. **Monitoring and Thresholds** Outcomes ➢ Compare and contrast various monitoring techniques for varroa mite populations ➢ Apply appropriate monitoring methods in field	➢ Participants will explain the life cycle of honey bees with a focus on queen bees, including their role within the colony and the importance of queen bees for colony health and productivity.



	while minimizing stress to the bees.			conditions to obtain accurate varroa mite counts	
11:00-12:00pm	**Hive management** **Outcomes** ➢ Participants will explain the roles of different bees in the colony (queen, workers, drones) and how their behaviour affects hive management		**Problem Solving in Beekeeping** **<u>Outcome</u>** ➢ Analyse common challenges faced during honey extraction and suggest viable solutions based on best practices.	**Understanding Principle of IPM** Outcomes ➢ Explain the key principles of Integrated Pest Management and how they apply to honey bee health and productivity. ➢ Describe the life cycles and biological characteristics of key pests and pathogens that impact honey bee colonies **Monitoring Techniques** Outcomes ➢ Demonstrate effective techniques for monitoring honey bee colonies for signs of pests	Principles of Grafting: **<u>Outcome</u>** ➢ Participants will describe the principles and science behind grafting, including the differences between natural and artificial queen rearing methods.


and diseases.
On Site Field Practical

		LUNCH			
1:00-2:00	**Hive management** **Outcomes** ➢ Participants will understand the developmental stages of honey bees, including egg, larva, pupa, and adult, and how this lifecycle impacts hive health and productivity.	**Infectious Disease Control** ➢ Surveillance and tracking of infectious diseases (human and animal). ➢ Protection of crops and livestock from pests and diseases. ➢ Management practices to prevent the introduction of invasive species. ➢ Monitoring and controlling biohazards affecting ecosystems. ➢ Impact of climate change on disease emergence and vector distribution		**Grafting Techniques** **Outcomes** ➢ Participants to learn the fundamentals of grafting techniques for queen rearing, including the biological principles behind grafting	**Identification of Suitable Larvae** **Outcome** Participants will learn how to select appropriate larvae for grafting, understanding the criteria for age and health that contribute to successful queen development.
2:00-4:00	**Hive management** **Outcomes** ➢ Participants will outline the seasonal management practices associated with beekeeping.		**Honey Harvesting Techniques** **Outcomes** ➢ Become familiar with safe and ethical honey harvesting methods. Learn about the	**Hands-On Grafting Practice** **Outcomes** ➢ Participants will successfully perform grafting techniques to transfer bee larvae into queen cups, understanding	**Grafting Techniques and Tools** **Outcomes** ➢ Participants will identify the different tools and materials used in grafting and understand their purposes and

			equipment and techniques used in extracting and processing honey.	timing and conditions for optimal success.	maintenance. ➢ Participants will demonstrate the ability to successfully graft bee larvae into queen cups or cells, following best practices for technique and handling.