

The content and structure of the CIC-Curtin-ACIAR extension package of modules for training farmer groups and cadet extension officers

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ABSTRACT

The ACIAR extension package has been designed to train smallholder farmers and cadet extension officers in all aspects of coffee production from establishing a new coffee garden, through to coffee harvesting and processing, and then marketing and financial management. All modules focus on the low input production system and incorporate simple low-cost techniques for farmers which are the key to improving production, quality and smallholder livelihoods. Key themes are sustainable production and labour efficiency, conveyed using a collaborative learning approach to encourage farmers to become fully engaged in the training. The training package is available free to download at: <https://www.aciar.gov.au/publication/MN220-PNG-coffee-manual-1>

KEYWORDS: smallholders; low input; livelihoods; sustainable production; labour efficiency; gender; collaborative learning; agricultural extension

INTRODUCTION

The ACIAR extension training package titled ‘Smallholder coffee production in Papua New Guinea’ has been developed to assist private sector, government and NGO-funded extension officers to train farmer groups and cadet extension officers in the production, processing and marketing of coffee. The package uses a ‘whole farm system’ approach to extension training that considers environmental, social, gender and income within broader livelihood strategies that include food production for home consumption and sale (see, Curry et al, this issue).

Key areas covered in the modules forming the package include:

1. Understanding smallholder coffee farmers
2. Sustainable, labour efficient coffee-growing practices grounded in the low input system of production
3. Financial and technical aspects of the production process
4. Coffee marketing and the certification process
5. Promoting networking amongst coffee stakeholders

Throughout the development of the training package there has been a high level of cooperation with CIC extension officers working with farmers, industry representatives (e.g., Monpi, NGHCE

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and Lahamenegu Coffee Factory) and NGOs (CARE International and AAK). Researchers involved in the ACIAR project ‘Protecting the coffee industry from Coffee Berry Borer in Papua New Guinea and Australia’ (HORT/2018/194) from CIC and the Queensland Department of Primary Industries (formerly Queensland Department of Agriculture and Fisheries – QDAF) have made important contributions to the training package because effective CBB management strategies are required in all facets of coffee production.

CIC extension will be the main provider of extension training using the extension training package to train their own farmer groups, cooperatives, as well as other extension providers, such as private sector extension providers and NGOs. It will also be used by CIC’s Women in Coffee Development Programme. The package will be registered with the National Training Council (NTC) to allow CIC to register a CIC coffee training school. This ‘training of trainers’ (TOT) model will greatly extend CIC’s extension capacity and reach.

MODULE CONTENT

A suite of more than 20 modules is currently available, some of which will be specifically for training cadet extension officers and the rest for training farmers. The suite of modules is separated into themes or units, some of which are still to be developed (Table 1).

Table 1. ‘Smallholder coffee production in Papua New Guinea: A training package for extension officers and farmers’

Module No.	Module Topic
Extension Officer Training Guides	
UNIT 1: EXTENSION PRINCIPLES	
Module 1.1	Introduction to the Coffee Extension Officer and Farmer Training Guides
Module 1.2	The extension officer - roles and effectiveness
UNIT 2: KNOWING YOUR FARMERS	
Module 2.1	Getting to know our coffee smallholders
Module 2.2	What factors affect smallholder coffee production?
CARE*	Organisational Strengthening Training https://pngcdwstandard.com/resources-for-use-by-cdws-working-with-wards-communities-groups-and-smes/ Strongim grup: course facilitator guide
Farmer Training Guides	
UNIT 1: BECOMING A COFFEE FARMER	
Module 1.1	Knowing your coffee tree
Module 1.2	Coffee nursery development
Module 1.3	Establishing a new coffee garden
UNIT 2: MANAGING YOUR COFFEE GARDEN	
Module 2.1	Weed control
Module 2.2	Maintenance pruning and rehabilitation
Module 2.3	Shade management
Module 2.4	Drainage
Module 2.5	Pest and disease management
Module 2.6	Coffee berry borer management
Module 2.7	Soil fertility and nutrient maintenance
Module 2.8	Intercropping in your coffee garden

UNIT 3: HARVESTING AND PROCESSING COFFEE	
Module 3.1	Coffee harvesting and processing
Module 3.2	Coffee grading systems and pricing
Module 3.3	Establishing a mini wet factory
UNIT 4: COFFEE MARKETING	
Module 4.1	Understanding the domestic coffee market
CARE*	Organisational Strengthening Training https://pngcdwstandard.com/resources-for-use-by-cdws-working-with-wards-communities-groups-and-smes/ 1. Kamapim ol praioriti 2. Kamapim ol eksen plen 3. Setim gutpela kastom bilong ronim grup 4. Wok bilong meneja na memba na lida
Module 4.2	Coffee certification
Module 4.3	Fairtrade certification
CARE*	Family Money Management Training https://pngcdwstandard.com/resources-for-use-by-cdws-working-with-wards-communities-groups-and-smes/ Family Money Management

*While most modules were developed in collaboration with CIC, Curtin University and CSIRO, the training package also incorporates some modules developed by CARE-International covering organisational strengthening and training in group governance, financial planning and management.

EXTENSION OFFICER TRAINING GUIDES

The extension officer training guides will be used for training government, private sector and NGO cadet extension officers (Available at: <https://www.aciar.gov.au/publication/MN220-PNG-coffee-manual-2>)

Unit 1: Extension principles

Participants will develop an understanding of what it is to be an extension officer, and the skills and qualities required to be effective. The extension officer not only provides advice but is also a problem solver, and to work with farmers successfully they must develop a collaborative approach to training.

Unit 2: Knowing your farmers

To be an effective extension officer, it is important to understand the characteristics of coffee smallholders: their production systems, households and communities, their livelihood systems and what influences smallholder decision-making. Furthermore, smallholder farmers typically have many constraints on production including constraints on the supply of externally sourced inputs and tools; labour, with most relying solely on family labour; accessibility to land, markets and other services; and technical knowledge in coffee production. Smallholders are a very diverse group with different extension needs and priorities.

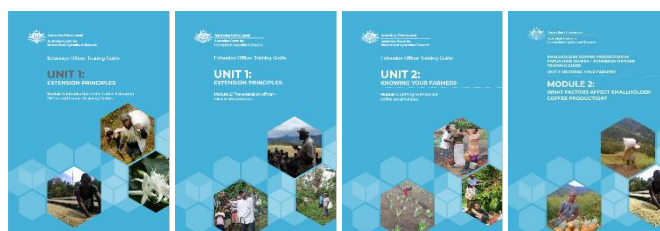


Figure 1. Examples of Extension Officer Training Guides

FARMER TRAINING GUIDES

The Farmer Training Guides will be used by extension officers to train farmer groups. The first two units address the technical aspects of coffee production using simple labour efficient techniques to produce healthy, productive coffee trees. The third unit is concerned with harvesting ripe and healthy cherry for quality, and post-harvest processing, all aimed at producing high quality parchment using cost-effective and labour efficient methods. The fourth unit covers coffee marketing and financial management as these are often overlooked aspects of the coffee supply chain. While the production of quality coffee is important, farmers must also understand and be involved in the business management and coffee marketing process so that they are adequately rewarded for their efforts.

Unit 1: Becoming a coffee farmer

This unit introduces the first step in becoming a coffee farmer which is establishing a coffee garden. Farmers learn some general information about the coffee industry and coffee trees, suitable coffee varieties for smallholders and the development of coffee cherry from seed to mature cherry. They are then provided with advice on how to grow quality seedlings and the best methods for establishing a new coffee garden: selecting and preparing the site, planting of shade trees and the coffee seedlings, and maintaining the new coffee garden.

Unit 2: Managing your coffee garden

Farmers will learn how to manage a coffee garden once it is planted. This will be in the context of a low input system of production and will include maintenance: weeds, pests and diseases, soil fertility, and pruning. While examining the nutrient status of smallholder coffee gardens and nutrient management, it was revealed that many coffee gardens were low in essential plant nutrients and that farmers were losing large quantities of potentially reusable nutrients. For example, the pulp remaining after processing coffee cherry to parchment was not being reused and so valuable nutrients contained within it were permanently lost. Smallholders rarely apply fertilisers, so to address the loss of soil fertility in coffee gardens there is a focus on good shade tree management and nutrient recycling such as recycling of coffee pulp.

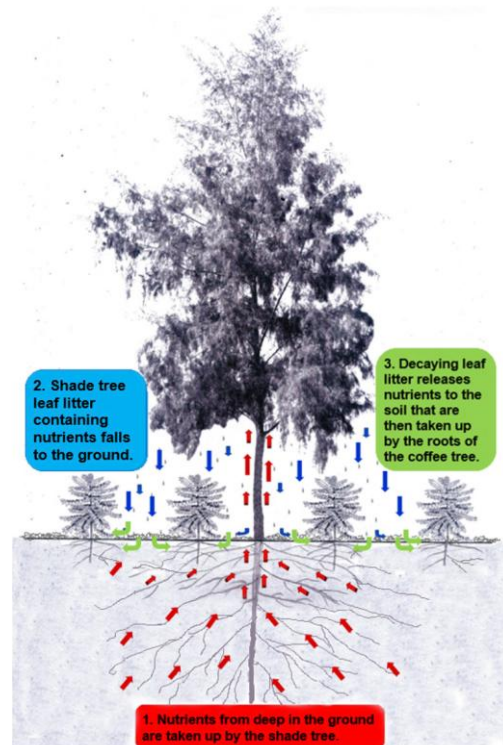


Figure 2. Cycling of nutrients in a shaded coffee garden

One of the most important modules in this unit is coffee berry borer management. Farmers will learn about the life cycle and methods of dispersal of CBB and how best to minimise its impact. Farmers are advised that the key to good CBB management is having a healthy coffee garden and implementing good sanitation practices during harvesting and processing.

The research confirmed that in some coffee communities, particularly in accessible locations, there was declining interest in coffee with smallholders becoming more involved in large-scale vegetable production for large urban markets in PNG. This was mainly due to land pressures, an inability to earn sufficient income from coffee to meet household needs, good access to markets and better income opportunities in vegetable marketing (Curry et al. 2017). Marketing of food crops is often undertaken by women because they have more control over the income – sometimes part of the coffee income earned from women’s labour is appropriated by men (Overfield 1998). Consequently, a module was included in this unit on intercropping in coffee gardens. This module provides guidance on intercrop selection and production as it is important intercrops have minimal impact on the coffee trees. It was demonstrated that intercropping with fertilised vegetables was an effective means of delivering nutrients to both food crops and coffee trees. There is also better maintenance of coffee gardens when intercropping is practised. It also increases livelihood options in areas experiencing land shortages.

Unit 3: Harvesting and processing coffee

This unit focuses on harvesting coffee and preparing it for sale. There is a very strong emphasis on quality in this unit while using simple labour efficient methods to improve quality. Because of poor processing techniques, farmers are paid significantly discounted prices for their parchment coffee. Most smallholders receive Y1 prices for their coffee which are considerably less than those received for higher quality grades. Improving incomes is therefore more than a matter of increasing total production: it is also about identifying ways to improve quality. To produce high quality cherry, farmers must maintain a healthy coffee garden and harvest when cherry is at the right stage of maturity. Furthermore, to minimise damage caused by CBB and the consequent reduction in quality, they must harvest fortnightly during the coffee season.

Most coffee households have little equipment for coffee processing with most processing their coffee by hand pulping and bag fermentation, with uneven fermentation often the result. In some remote sites farmers use stones to remove the pulp. Demucilagers (mini wet mills) (Plate 1) are a potential strategy for dramatically improving returns to labour through increased labour productivity and better-quality parchment. Preliminary trials conducted on the use of demucilagers as part of the research project have shown marked improvements in quality and prices for farmers. A module is being developed on the establishment of demucilagers. This would apply to farmer groups rather than to individual farmers due to purchase and establishment expenses.



Plate 1. Demucilager used to remove pulp and mucilage from coffee cherry.

Unit 4: Coffee marketing

Generally, smallholders have little understanding of the coffee market and pricing. A module will be included that will inform them of how the grading and pricing system in the coffee industry works and the best form in which they should sell their coffee, which is often dependent on their proximity to markets.

Unit 4 will assist farmers to understand the coffee market and the operation of grower groups. This is an important unit as there are many misconceptions about the coffee market and pricing among smallholders in PNG. This unit also includes modules on coffee certification which is a marketing tool now being used by many coffee exporters. In time it will be necessary for coffee growers to become certified in order to stay competitive in the international market. Most of the coffee growing and processing practices recommended in the training package are based on the requirements of the main certifying organisations.

Finally, the last module in Unit 4 will inform farmers about financial planning and management. It is important to have a whole household approach to money management to ensure income stability and long-term sustainable income generation for coffee families.



Plate 2. A coffee grower cooperative committee meeting.

MODULE STRUCTURE

To keep the training process simple for extension officers, each module follows the same format. The first sections prepare the extension officer for what the module will cover and what is required to complete it – introduction, aim, learning outcomes, lesson plan and teaching aids. The extension officer will then work through the module topics with the farmers, and they will do some exercises throughout. At the end of most modules is a quiz and a list of reading resources for the extension officer if additional information is required.

Also, to be noted is that throughout the training package an opportunity is given to farmers to contribute their own ideas on how best to grow, process and market coffee. Often farmers' tried and tested methods are not shared with extension providers and other farmers so encouraging collaboration while working through the modules gives light to new ideas and strengthens relationships between those providing extension and those receiving it.

CONCLUSION

Access to an extension training package for both cadet extension officers and farmers directed at the low-input farming system of smallholders is critical for strengthening smallholder coffee production. The new package incorporates content for training cadet extension officers on how to effectively engage smallholders. The farmer training content guides extension officers in providing simple low-cost techniques for farmers which are the key to improving production, quality and smallholder livelihoods. The format of the modules is consistent throughout to simplify the training process for extension officers.

The training package can be downloaded for free from:

<https://www.aciar.gov.au/publication/MN220-PNG-coffee-manual-1>

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