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# SMALLHOLDER COFFEE PRODUCTION IN PAPUA NEW GUINEA

A training package for extension officers  
and farmers



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# SMALLHOLDER COFFEE PRODUCTION IN PAPUA NEW GUINEA

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A training package for extension officers  
and farmers

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Coffee Industry Corporation Ltd (CIC)

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Curtin University



2023

## The Smallholder Coffee Production in Papua New Guinea Training Program

The training program contains modules prepared in partnership with the Australian Centre for International Agricultural Research (ACIAR) and by CARE-International.

The structures of the Extension Officer Training Program and the Farmer Training Program are shown in the table below.

Some modules also contain references to additional training that learners are encouraged to complete as part of their training.

## ACIAR Resource

Monograph MN220 Smallholder Coffee Production in Papua New Guinea: a training package for extension officers and farmers. This package contains the modules for both the extension officer training guide and the farmer training guide. The ACIAR monograph is available online from [www.aciar.gov.au](http://www.aciar.gov.au)

Hard copies of the ACIAR training package may be available by contacting ACIAR or the Coffee Industry Corporation (CIC)

## CARE Resources

Organisational Strengthening Training  
CARE Family Money Management Training

The CARE modules are available online from <https://pngcdwstandard.com/resources-for-use-by-cdws-working-with-wards-communities-groups-and-smes>

Hard copies of the CARE modules may be available by contacting the CIC or CARE-International.

## Extension Officer Training Program

Title	Module reference
Introduction to smallholder coffee production in Papua New Guinea	ACIAR Smallholder Coffee Production in Papua New Guinea Training Package
<b>Extension Principles</b>	
Introduction to the Coffee Extension Officer and Farmer Training Guides	ACIAR Extension Officer Training Guide Unit 1 Module 1
The extension officer - roles and effectiveness	ACIAR Extension Officer Training Guide Unit 1 Module 2
<b>Knowing Your Farmers</b>	
Getting to know our coffee smallholders	ACIAR Extension Officer Training Guide Unit 2 Module 1
What factors affect smallholder coffee production?	ACIAR Extension Officer Training Guide Unit 2 Module 2
Strongim grup: course facilitator guide	CARE Organisational Strengthening Training

## Farmer Training Program

Title	Module reference
<b>Becoming a Coffee Farmer</b>	
Knowing your coffee tree	ACIAR Farmer Training Guide Unit 1 Module 1
Coffee nursery development	ACIAR Farmer Training Guide Unit 1 Module 2
Establishing a new coffee garden	ACIAR Farmer Training Guide Unit 1 Module 3
<b>Managing Your Coffee Garden</b>	
Weed control	ACIAR Farmer Training Guide Unit 2 Module 1
Maintenance pruning and rehabilitation	ACIAR Farmer Training Guide Unit 2 Module 2
Shade management	ACIAR Farmer Training Guide Unit 2 Module 3
Drainage	ACIAR Farmer Training Guide Unit 2 Module 4
Pest and disease management	ACIAR Farmer Training Guide Unit 2 Module 5
Coffee berry borer management	ACIAR Farmer Training Guide Unit 2 Module 6
Soil fertility and nutrient maintenance	ACIAR Farmer Training Guide Unit 2 Module 7
Intercropping in your coffee garden	ACIAR Farmer Training Guide Unit 2 Module 8
<b>Harvesting and Processing Coffee</b>	
Coffee harvesting and processing	ACIAR Farmer Training Guide Unit 3 Module 1
Coffee grading systems and pricing	ACIAR Farmer Training Guide Unit 3 Module 2
Establishing a mini wet factory	ACIAR Farmer Training Guide Unit 3 Module 3
<b>Coffee Marketing</b>	
Understanding the domestic coffee market	ACIAR Farmer Training Guide Unit 4 Module 1
Kamapim ol prairiti	CARE Organisational Strengthening Training
Kamapim ol eksen plen	CARE Organisational Strengthening Training
Setim gutpela kastom bilong ronim grup	CARE Organisational Strengthening Training
Wok bilong meneja na memba na lida	CARE Organisational Strengthening Training
Coffee certification	ACIAR Farmer Training Guide Unit 4 Module 2
Fairtrade certification	ACIAR Farmer Training Guide Unit 4 Module 3
Family money management	CARE Family Money Management Training

# FOREWORD

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Coffee is Papua New Guinea's second largest agricultural export and employs over 400,000 households (2.5 million people) who produce coffee in 12 provinces. Despite coffee's economic importance for rural livelihoods, national production has stagnated over the last 10 years at around one million bags per year. Smallholders have steadily increased their share of total national production to over 85%, but smallholder yields have fallen, and coffee quality is often poor. Plantation yields of green beans are almost twice as high as smallholder yields, indicating that improvements can be made in smallholder practices that could lift their productivity and incomes.

The Australian Centre for International Agricultural Research (ACIAR) is mandated under the ACIAR Act (1982) to work with partners across the Indo-Pacific region to generate the knowledge and technologies that underpin improvements in agricultural productivity, sustainability and food systems resilience. We do this by funding, brokering and managing research partnerships for the benefit of partner countries and Australia.

Many Papua New Guinean coffee farmers have holdings of less than one hectare. The vast majority follow a low input system of production using basic, low-cost technologies and have a high dependence on family labour. However, most of the extension training materials available in Papua New Guinea are based on capital-intensive plantation production methods, using high levels of technology or mechanisation and relying on a paid workforce.

Additionally, PNG was previously free of coffee berry borer, but it has now entered highlands coffee production areas and could have a major impact on the livelihoods of millions of rural families and their communities. This pest could also pose a significant biosecurity threat to Australia.

ACIAR has supported Curtin University to work with in-country partners in Papua New Guinea to develop this training package for coffee extension officers and smallholder coffee producers. The training package provides current best-practice knowledge and coffee plantation management techniques specific to smallholders, with the ultimate goal of boosting their production levels and coffee quality and in turn, better livelihoods for producers, their families and rural communities in PNG.



**Andrew Campbell**  
Chief Executive Officer, ACIAR

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# 1.1 BACKGROUND TO THE SMALLHOLDER COFFEE PRODUCTION TRAINING PACKAGE

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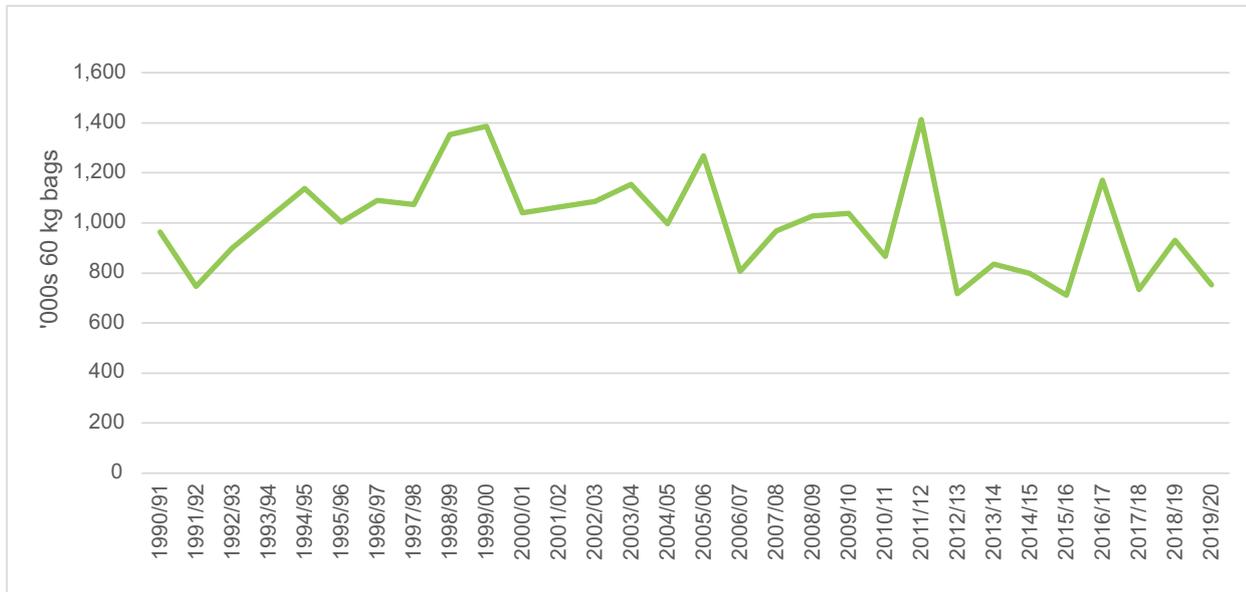
This training package has been designed to assist private sector, government, and Papua New Guinea Agriculture Commercialization and Diversification Project (PACD, formerly Productive Partnerships in Agriculture Project (PPAP)) and non-government-organization (NGO) funded extension officers to train farmer groups in the production, processing and marketing of coffee. It is also a resource for the training of cadet extension officers at the Coffee Industry Corporation Ltd (CIC) and for those recruited by private and NGO-sector organisations. This is an introduction to the training package, it outlines the background to the package and discusses its purpose.

## Why the need for this training package?

Coffee is the most important export cash crop in highlands Papua New Guinea and is the primary source of income for over 400,000 smallholder farmers and their families who produce 85% of Papua New Guinea's coffee. However, since the mid-1980s, smallholder production and incomes have stagnated and are well below potential levels. The training package has been designed to address this issue of faltering smallholder production by seeking to improve production, coffee quality and the incomes of smallholder men and women and their families. The training package aims to do this within the low input system of production which is the dominant production strategy of coffee smallholders. The low input system of production is characterised by:

- low-cost production with inputs of fertiliser, pesticides, and herbicides considerably below plantation rates of inputs
- the use of simple processing techniques
- a heavy reliance on family labour

## Papua New Guinea coffee production



Papua New Guinea coffee production 1990–91 to 2019–20 (Source: International Coffee Organisation)

There is a critical shortage of suitable extension resources for the low input farming methods of Papua New Guinea's coffee smallholders. Private sector representatives and farmer groups have called for training resources for coffee which recognise that the vast majority of smallholders pursue a low input system of coffee production that is just one component of a broader suite of livelihood activities. Therefore, this training package considers the interactions of coffee production strategies with other livelihood strategies such as the recent rapid growth in vegetable production in coffee growing regions with good market access – what happens in one affects the other. These other livelihood activities compete for smallholders' time and labour.

## Previous extension training programs and materials

Most of the extension training material available worldwide, including in Papua New Guinea, is based on high-input production methods more in keeping with capital intensive plantation production, using high levels of technology or mechanisation and relying on a paid workforce. In contrast, Papua New Guinea coffee farmers have very small holdings of coffee (<1 hectare). The vast majority follow a low input system of production using basic, low-cost technologies and have a high dependence on family labour.

The emphasis on high-input farming in much extension material is understandable when we consider that historically the aim of most extension organisations throughout the world was to shift traditional farmers to high input farming in the pursuit of higher production and greater land productivity (yield per hectare). This has been an almost impossible task in many countries, including Papua New Guinea, because a whole range of socio-cultural factors make such transitions difficult for the communities involved.

Also, it is becoming increasingly clear to researchers that many of the traditional farming techniques of farmers in Papua New Guinea and elsewhere were highly sustainable and resilient, providing stable production through time, without a dependence on costly external inputs. Traditional farming methods are often based on agroforestry principles, which are becoming increasingly recognised throughout the world as contributing to the resilience of farming systems, especially in the context of climate change. Agroforestry has been practised successfully by Papua New Guinea farmers for thousands of years, and some of the key principles contributing to sustainable low input systems of coffee production are emphasised throughout these modules.

From 2004, CIC initiated the Farmer Demand Driven Extension program so that extension could be more aligned with farmers' needs. The program worked with farmer groups to identify farmer training needs. This was a valuable program, but there was little emphasis on linking farmer groups to market or export companies to create a strong price signal for quality. Farmers and other industry players saw this as particularly important, especially given that group training and marketing have the potential to meet the growing traceability and quality demands of the expanding specialty coffee market.

Due to inadequate funding for extension, growers received little or no coffee extension training partly explaining farmers' relatively low levels of technical knowledge of coffee husbandry and post-harvest-processing. Overall, extension delivery was insufficient and spread too thin to have any meaningful impact on coffee farmers' level of technical knowledge.

## What informed the design and content of the training modules?

The training modules were developed from research findings from the ACIAR project 'Improving Livelihoods of Smallholder Families through Increased Productivity of Coffee-based Farming Systems in the Highlands of Papua New Guinea' (ASEM/2008/036). Smallholder families from remote villages as well as villages near town were involved in the research along with key stakeholders in the industry including exporters, processors, NGOs and extension providers.

Activities that informed the design and content of the extension training package included:

- Socioeconomic surveys of 100 households at each of 4 sites in Eastern Highlands Province (2 sites close to markets and 2 remote sites)
- Time/labour allocation surveys of a sub-sample of 30 households at each of the 4 sites
- Surveys of farmer technical knowledge and an assessment of their technical needs
- Discussions with key extension officers and industry personnel on the design of the training modules
- Intercropping field trials in coffee gardens with emphasis on the efficient use of nutrients
- Nutrient recycling trials
- Ecopulper trial

Content has also been drawn from findings from the following ACIAR projects:

- 'Identifying opportunities and constraints for rural women's engagement in small-scale agricultural enterprises in Papua New Guinea' (ASEM/2014/054)
- 'Protecting the coffee industry from coffee berry borer in Papua New Guinea and Australia' (HORT/2018/194)

Where appropriate, some of the technical content and knowledge has been drawn from previous training materials produced by CIC. Some of this material has been adapted for the low-input model of production practised by most coffee smallholders.

## Recipients of the training package

CIC has limited extension resources and there are not enough extension officers to service the needs of Papua New Guinea's smallholder coffee farmers.

Therefore, as well as meeting the training material needs of CIC for delivery of extension to its associated farmer groups, the training package also enables CIC to leverage-up its extension effort by training extension officers employed in the private and non-government sectors.

CIC will be the primary provider of extension training using the training package to train:

- CIC's Women in Coffee Development Program
- Cooperatives/farmer groups associated with CIC
- Other extension providers such as private sector extension service providers who can then, using this package, deliver training to their own farmer groups
- NGOs working with farmer groups

The package is registered with the National Training Council to allow CIC to train private sector and NGO-supported extension officers in its use.

## Source of further information

Curry GN, Webb M, Koczberski G, Pakatul J, Inu SM, Kiup E, Hamago MR, Aroga L, Kenny M, Kukhang T, Tilden G and Ryan S (2017) Final report, 'Improving Livelihoods of Smallholder Families through Increased Productivity of Coffee-based Farming Systems in the Highlands of PNG' (ASEM/2008/036), ACIAR, available at: <https://espace.curtin.edu.au/handle/20.500.11937/54174> or [www.aciar.gov.au/publication/asem-2008-036-final-report](http://www.aciar.gov.au/publication/asem-2008-036-final-report)



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