


Philippines

 **A\$4.47** million
Budgeted funding

 **14**
Bilateral and regional
research projects

 **1**
Small projects and
activities

The Philippine economy is steadily recovering from the 9.5% contraction in 2020 brought about by natural disasters such as volcanic eruptions and strong typhoons, and the COVID-19 pandemic. The Philippines was heavily impacted by one of the world's longest and strictest enforced periods of community quarantine, which led to many businesses shutting down, increased unemployment and loss of income among workers in the informal sector, and a reduction in domestic consumption and purchasing power.

In 2021, with the calibrated reopening of businesses and mass transportation and the relaxation of quarantine restrictions, economic activities gradually resumed, resulting in a 5.6% economic growth, moving closer to the pre-pandemic average growth rates over the last decade of about 6%. While the agriculture sector remained resilient in early 2020, the lingering African swine fever and many strong typhoons have eroded the gains and made recovery efforts challenging.

Food insecurity remains a significant issue for the poorest and most vulnerable. To address this, the Philippine government is working on increasing food sufficiency levels through various initiatives such as the Rice Competitiveness Enhancement Fund, loan programs and farm-to-market assistance and disease management.

The Department of Science and Technology - Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD) is the main government partner of ACIAR in the Philippines. In support of national efforts to mitigate the impacts of the pandemic on agriculture and food systems, PCAARRD initiated a COVID-19 response program, GALING-PCAARRD, which assists communities around the country through technology information sharing, food product distribution, and provision of food production technologies and livelihood opportunities. It also focuses on enabling innovative research and development and integrating the different DOST agencies' initiatives in partnership with the State Universities and Colleges to enhance the food value chain for selected commodities in the regions towards food resilience.

Since the launch of the National Food Policy in January 2021, which directed all public-led initiatives related to hunger, food security, nutrition and sustainable agriculture, to be well coordinated and responsive across national and regional levels, there have been modest improvements in the hunger rate from 21.1% in 2020 to 11.8% by the end of 2021. The Inter-Agency Task Force for Zero Hunger created a roadmap that addresses the fragmented agriculture supply chain prone to disruptions, massive food waste, huge losses for farmers, higher costs and lower quality for consumers. However, while these efforts are laudable, there is still a lot to be done to further reduce hunger rates to pre-pandemic levels and, ultimately, end hunger.

The Philippines is one of Australia's longest-standing bilateral relationships, celebrating 76 years of diplomatic relationship in 2022. Bilateral cooperation is underpinned by the Philippines–Australia Comprehensive Partnership and the Philippines–Australia General Agreement on Development Cooperation. As one of the major bilateral partners for the Philippines, Australia remains committed to collaborate with the Philippine Government on recovery efforts and the country's development.

Country priorities

ACIAR has worked with the Philippine Government, research and academic institutions, private sector and civil society partners for 4 decades, governed by the Memorandum of Agreement for Philippine–Australian collaboration in agriculture and forestry research. Country partnerships have evolved in recent years with significant co-investment from our main bilateral partner, DOST-PCAARRD, and with a deepening of the partnership as defined in the 2018 Record of Partnering Arrangements between PCAARRD and ACIAR for Scientific and Technical Cooperation for Agriculture, Aquatic and Natural Resources.

Our program in the Philippines focuses on research to make agricultural products more marketable and internationally competitive and to build the resilience of smallholder farmers, fishers and their households from impacts of natural disasters, climate change and external shocks such as the COVID-19 pandemic. Higher-value products and market competitiveness would improve food security by enabling smallholder farmers and traders to increase their income and access to other basic services and economic opportunities.

We work with the Philippine Government to progress the Harmonised National Research and Development Agenda for Agriculture, Aquatic and Natural Resources to promote prosperity, reduce poverty, and enhance stability. We do this through research for development that aims to:

- » improve agriculture and food production systems
- » make agricultural products more competitive in the market
- » enable competitive and sustainable fisheries and aquaculture
- » improve land and water resource management for profitable and sustainable agriculture
- » build resilience to climate change and other natural shocks
- » increase adoption of technology through community engagement, enabling extension services and support to policy development.

These priorities remain relevant, and the underlying issues have been compounded considering the COVID-19 pandemic.



The ACIAR program in the Philippines focuses on research to make agricultural products more marketable and internationally competitive and to build the resilience of smallholder farmers, fishers and their households. Photo: Ryam Yap

During 2020, ACIAR examined food systems in the Philippines to identify vulnerabilities exposed or amplified by the COVID-19 shock. This information, published in ACIAR Technical Report 96 *COVID-19 and food systems in the Indo-Pacific: An assessment of vulnerabilities, impacts and opportunities for action*, continues to be relevant in informing research and development to support food systems resilience in the Philippines. In particular, the assessment helped identify focus areas for research collaboration in the Philippines that will contribute to increasing food systems resilience in the face of future shocks.

Capacity building is closely linked to our research initiatives. Opportunities include the John Allwright Fellowship, the John Dillon Fellowship, the Meryl William Fellowships and other initiatives under the alumni engagement plan. Each program focuses on leadership and career development through short and medium-term support for Philippine partners. In August 2022, ACIAR and the Department of Science and Technology (DOST) entered into a new partnership to pilot a joint fellowship program with co-investments from both organisations to send Filipino researchers to Australia for their PhD.

In recent years, ACIAR has introduced innovations to deliver our learning and development programs. One example is the Philippine Agribusiness Masterclass, which successfully brought together a cohort of researchers, academics, farmer leaders and representatives from the private sector to collaborate. This course has now been integrated as a regular course offering of the DOST-PCAARRD, with a second cohort starting in the program last August 2022. In 2021, the John Dillon Fellowship was redesigned and is currently being delivered in-country to a cohort of up to 20 participants with a strong focus on cross-organisational collaboration and strengthening ties with Australian collaborators. The first in-country fellowship program commenced in the Philippines in May 2021, with participants from key government and research partners. The fellows are currently focused on their research projects which are expected to be completed before the end of 2022.

Australian Alumni play an important role as partners in research for development. ACIAR supported the establishment of the first Agriculture, Aquatic and Natural Resources Community of Practice in the Philippines in 2022, with an initial membership of 27 ACIAR alumni who are committed to 'best fit' solutions and approaches to the challenges in the sector.

Outreach and communications are increasingly important as a means to strengthen understanding and awareness of the impact of our programs as part of Australia's aid program in the Philippines, to support and strengthen relationships between in-country project partners and stakeholders and to share knowledge generated from ACIAR supported research programs to the public and policymakers.

2022-23 research program

- » **15 ACIAR-supported projects in the Philippines**
- » **9 projects are specific to this country**
- » **6 projects are part of regional projects**

The research program addresses our high-level objectives, as outlined in the ACIAR 10-Year Strategy 2018-2027, as well as specific issues and opportunities identified by ACIAR and our partner organisations. The following sections briefly describe individual ACIAR-supported projects and anticipated outputs in the Philippines. The projects are grouped according to research program. Each project description is referenced in a list at the end of this section, which provides the project title and code.

Agribusiness

Economic growth across South-East Asia has resulted in a growing urban middle class. This growth in affluence is driving demand for dairy-based products, and national dairy markets are growing rapidly. The increase in domestic dairy consumption in Indonesia and the Philippines presents an opportunity for significant growth in domestic dairy farming sectors, particularly for smallholder dairy farmers. A new project led by Dr Brad Granzin of Australasian Dairy Consultants aims to develop and pilot commercially viable, sustainable smallholder-inclusive dairy value chains. The project will capitalise on the growing domestic demand for short shelf-life dairy products and collaborate with partners to develop interventions to improve farm productivity, product quality and availability, and supply chain efficiencies.¹

ACIAR-supported research in the southern Philippines showed that integrating vegetable and coffee value-chain development and community engagement leads to improved innovation, competitiveness, quality and value. However, success occurred at very local scales and, in general, most smallholder horticulture growers in the Philippines cannot compete in higher-value, more-demanding markets. A project led by Dr Lily Lim-Camacho of CSIRO will identify opportunities for inclusive agribusiness-led market development, evaluate opportunities for digital technologies to increase competitiveness and farm-to-market linkages, and evaluate models for public-private learning alliances and innovative co-investment with agribusiness firms. In 2022-23, researchers will conduct participatory community and vegetable and coffee farming systems analysis.²

Fisheries

In the Philippines, the successful restoration of damaged coral reefs in experimental plots has led to notable increases in reef fish abundance and fish species richness, compared with control plots where coral was not restored. A project led by Professor Peter Harrison of the Southern Cross University has established rigorous protocols and long-term monitoring and evaluation of the impacts on fish communities and other reef resources from coral restoration in the northern Luzon region. The project concludes in 2022 with training courses for local communities, reef managers and researchers to build capacity for future fish surveys, reef restoration programs and best-practice reef fisheries management.³

Previous ACIAR research partnerships successfully demonstrated rapid coral population recovery, re-establishment of breeding populations and increased fish abundance from larval coral restoration interventions. Professor Peter Harrison of the Southern Cross University leads a 5-year project to significantly increase the scale of restoration interventions. Techniques established in previous projects will be refined for application in large-scale restoration trials in 4 regions of the Philippines. Trials will be monitored to quantify coral reproduction success. In 2022-23 the project team will continue working with communities, researchers and local governments to establish coral restoration networks in the trial regions to support local restoration activities. Heat-stress experiments will be conducted to quantify larval production, settlement and recruitment rates to identify heat-tolerant adult coral genotypes that are resilient under future climate-change scenarios.⁴

Coral reef ecosystems provide important livelihood opportunities to coastal communities in the Philippines, but they are threatened by climate change, overfishing, destructive fishing practices and pollution. While the success of coral restoration using larval reseeded techniques has been confirmed by previous and ongoing ACIAR-supported projects, significant challenges remain regarding the integration of this technology with existing maritime policy and governance to ensure the sustainability of restored reefs. Associate Professor Michael Fabinyi of the University of Technology Sydney leads a project funded by DFAT that aims to improve the institutional effectiveness of coral reef restoration by understanding political-economic influences and drivers at multiple scales, and applying lessons learned through a marine governance network-based approach.⁵

Dried sea cucumbers are highly valued in markets across China and South-East Asia. Overfishing and poor fisheries management throughout the Asia-Pacific region have resulted in serious declines of sea cucumber stocks and even led to fishery closures, reducing income-generating opportunities for coastal communities. A project led by Professor Paul Southgate of the University of the Sunshine Coast is developing culture methods that support pond-based sea cucumber farming in Vietnam and sea-based farming in the Philippines. In 2022-23 activities will include assessing potential predator mitigation measures, continuing field experiments and developing protocols for the responsible use and transfer of sandfish.⁶



Dried sea cucumbers are highly valued in markets across China and South-East Asia. A project led by the University of the Sunshine Coast is developing culture methods that support sea cucumber farming in the Philippines and Vietnam. Photo: Mark Anthony Perandos

Horticulture

Fusarium wilt tropical race 4 (TR4), or Panama disease, has become widespread throughout South-East Asia. The disease is threatening smallholder banana production in Indonesia, the Philippines and, more recently, Laos. A project led by Dr Anthony Pattison of the Queensland Department of Agriculture and Fisheries aims to develop an integrated management response to the spread of the disease. The research will investigate the effects on banana production of altering the banana microbiome to suppress disease and increase plant resistance. During 2022–23, the project team will analyse completed field surveys of production systems and natural environments, and there will be ongoing development and training in statistics and experimental procedures for glasshouse and field experiments.⁷

About 40 tropical fruit fly species damage horticultural crops and impede trade throughout South-East Asia. A project in Indonesia and the Philippines builds on the success of previous ACIAR projects, and links to fruit-fly work in other ACIAR partner countries and Australia. The project, led by Mr Stefano De Faveri of the Queensland Department of Agriculture and Fisheries, aims to reduce fruit-fly infestation of mango crops through area-wide management of the pest, and improve pre-harvest and post-harvest practices. The ultimate aim is to improve the yield and quality of crops in order to improve livelihoods and trade opportunities. During 2022–23, focus areas for the project include training farmers and other stakeholders in area-wide management techniques, evaluation of techniques implemented in the field, and integration of techniques into best management practice.⁸

Vegetable consumption is low in the Philippines for several reasons, including the perception that vegetables are of poor quality and unsafe. Vegetable farmers are not well trained in the appropriate use of pesticides, resulting in pesticide residues above permissible limits in harvested crops, exposure of farm workers to pesticide poisoning and contamination of soil and water. Dr Gordon Rogers of Applied Horticultural Research leads a project to improve vegetable supply chains to meet consumer expectations in terms of quality, food safety, nutritional value and price. During 2022–23, the project will continue to measure the social and economic impact of adopting new vegetable good agricultural practice (GAP) protocol and continue training key support personnel, including leading farmers.⁹

Mango production in the Asia-Pacific region accounts for about two-thirds of global production. Much of the crop is produced by smallholders, who achieve relatively modest yields and participate in traditional value-chain arrangements that offer little incentive to innovate or pursue higher quality. Some producers seek better returns by supplying higher-value export markets (such as Korea), but struggle to deliver fruit that meets market or regulatory standards. Dr Muhammad Sohail Mahzar of the Northern Territory Department of Primary Industry and Fisheries Industry, Tourism and Trade will lead a new project in Cambodia and the Philippines that aims to improve the ability of selected mango supply chains to deliver fruit that better meets consumer expectations of quality and value, and provide smallholder growers with a better return on investment.¹⁰

Livestock Systems

A new project will be established in Indonesia, Laos and the Philippines during 2022–23, as part of the ACIAR-IDRC Research Program on One Health. Led by the University of the Philippines (Los Banos), the project will investigate the potential to enhance livestock production systems in South-East Asia using an EcoHealth/One Health approach (page 24).¹¹

The University of the Philippines will also lead a second project in the program to develop a policy approach to support the Philippines' national surveillance and control programs for African swine fever, avian influenza and antimicrobial resistance.¹²

Social Systems

More than 24 million people in the Philippines, most of whom live below the poverty line and rely on subsistence agriculture, especially in the country's rural uplands. Deforestation and land degradation in the uplands are major national environmental and social issues. A project led by Dr Nestor Gregorio of the University of the Sunshine Coast focuses on forest landscape restoration to enhance the livelihoods of low-income residents of rural areas. During 2022–23, information from pilot testing of designs for woodlots, agroforestry systems and woodlot/crop systems suited to smallholders and communities will be used to produce manuals on smallholder-based tree-crop farming systems. Guidelines also will be published to assist the formulation of forest and landscape restoration policy within the Asia-Pacific region.¹³



Soil and Land Management

Rubber is the fourth largest crop in the poorest province of the southern Philippines, Agusan del Sur. Only 50% of the total rubber area planted is productive or tappable, and average yield in the province is much lower than the national average. By introducing improved profitable rubber-based intercropping systems and sustainable management regimes, a project led by Professor Chengrong Chen of Griffith University aims to boost household incomes for Indigenous smallholder subsistence farmers. During 2022–23, the project team will finalise intervention strategies to ensure gender equity, report on the best nutrient and fertiliser management schemes for increasing soil fertility, and continue delivering capacity building activities to promote resilient market-oriented rubber-based intercropping systems with low risk and high productivity and profitability.¹⁴

Vegetable production systems of upland farming areas of the Philippines are intensively managed and suffer problems including severe soil acidity, undiagnosed micronutrient deficiencies, excessive accumulation of copper and zinc, excessive application of fertilisers and manures, and erosion. Serious soil-borne pathogens also affect productivity in these intensive farming systems. Dr Stephen Harper of the University of Queensland leads a new project to develop management strategies that mitigate, remediate and reduce the risks of contaminants in soils across 3 major vegetable production regions. The project starts with research to provide a clear understanding and validation of the current soil nutrient status, including excesses and deficiencies, and potential short-term and long-term impacts of accumulation of essential heavy metals, particularly copper and zinc, on vegetable production.¹⁵

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See page 186 for contact details.

Current and proposed projects

1. Evaluating supply chain interventions and partnerships to sustainably grow the smallholder dairy sectors of Indonesia and the Philippines (AGB/2021/124)
2. Agribusiness-led inclusive value chain development for smallholder farming systems in the Philippines (AGB/2018/196)
3. Baseline monitoring and evaluation of long-term impacts on fish stocks from coral restoration [Philippines] (FIS/2018/128)
4. Regional coral restoration networks and appropriate technologies for larger-scale coral and fish habitat restoration in the Philippines and Australia (FIS/2019/123)
5. Institutional effectiveness and political economy of coral reef restoration in the Philippines (FIS/2021/112)
6. Increasing technical skills supporting community-based sea cucumber production in Vietnam and the Philippines (FIS/2016/122)
7. An integrated management response to the spread of *Fusarium* wilt of banana in South-East Asia [Indonesia, Laos, Philippines] (HORT/2018/192)
8. Development of area-wide management approaches for fruit flies in mango for Indonesia, Philippines, Australia and the Asia-Pacific region (HORT/2015/042)
9. Developing vegetable value chains to meet evolving market expectations in the Philippines (HORT/2016/188)
10. Improving mango crop management in Cambodia, the Philippines and Australia to meet market expectations (HORT/2016/190)
11. Livestock enhancement through EcoHealth/One Health assessment in South-East Asia (ACIAR-IRDC One Health Research Program) [Indonesia, Laos, Philippines] (LS/2022/163)
12. Policy support to the Philippines' national surveillance and control programs for African swine fever, avian influenza and antimicrobial resistance: A One Health systems approach (ACIAR-IRDC One Health Research Program) (LS/2022/162)
13. Enhancing livelihoods through forest and landscape restoration [Philippines] (ASEM/2016/103)
14. Land management of diverse rubber-based systems in the southern Philippines (SLAM/2017/040)
15. Managing heavy metals and soil contaminants in vegetable production to ensure food safety and environmental health in the Philippines (SLAM/2020/117)