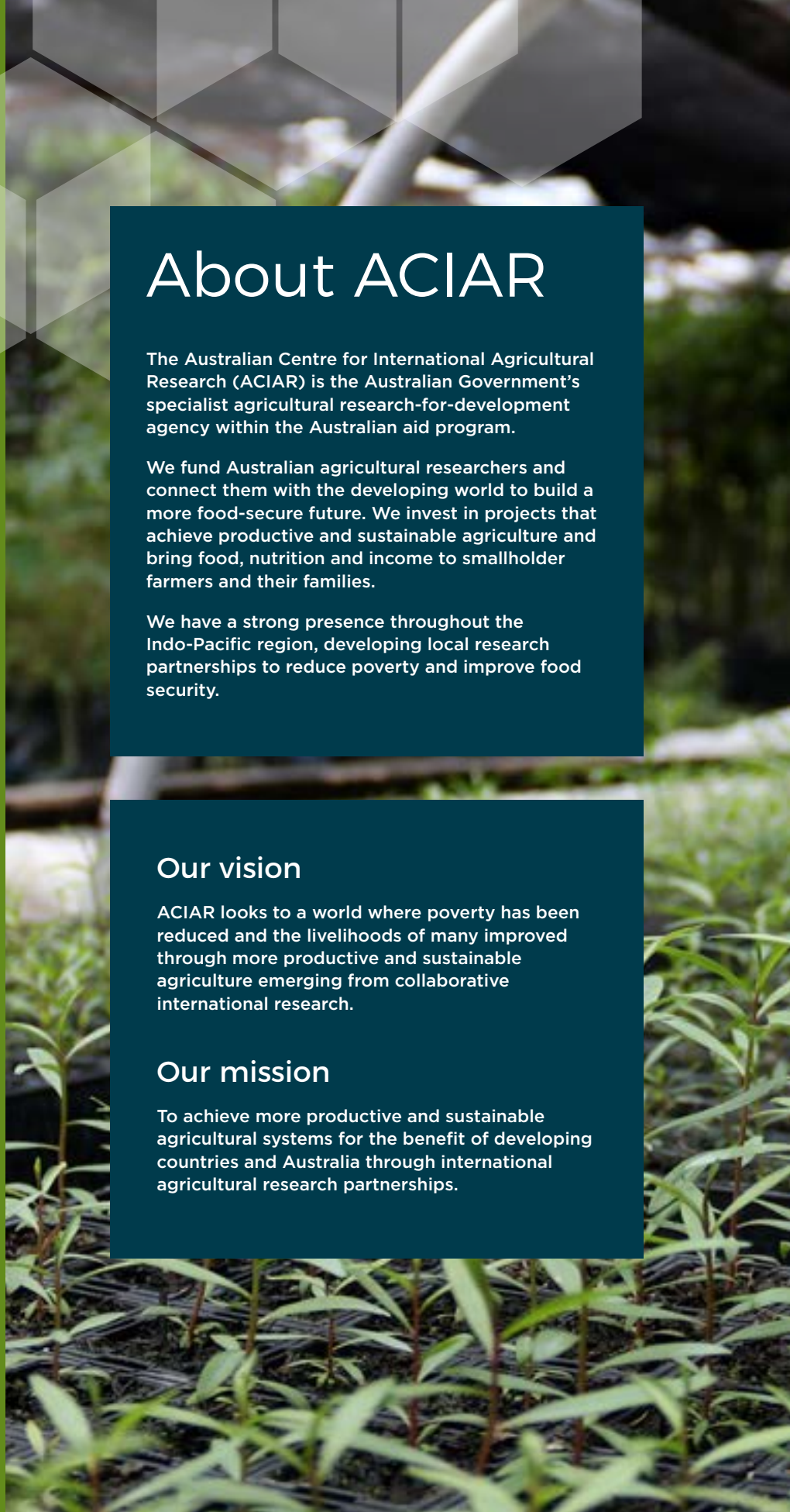
Australian Government

Australian Centre for
International Agricultural Research

ACIAR
Annual Review
2020–21



About ACIAR

The Australian Centre for International Agricultural Research (ACIAR) is the Australian Government's specialist agricultural research-for-development agency within the Australian aid program.

We fund Australian agricultural researchers and connect them with the developing world to build a more food-secure future. We invest in projects that achieve productive and sustainable agriculture and bring food, nutrition and income to smallholder farmers and their families.

We have a strong presence throughout the Indo-Pacific region, developing local research partnerships to reduce poverty and improve food security.

Our vision

ACIAR looks to a world where poverty has been reduced and the livelihoods of many improved through more productive and sustainable agriculture emerging from collaborative international research.

Our mission

To achieve more productive and sustainable agricultural systems for the benefit of developing countries and Australia through international agricultural research partnerships.

ACIAR Annual Review
The Annual Review features key achievements and outcomes of the work of ACIAR and its partners during 2020–21, through quick facts and case studies.

This report should be attributed as the *ACIAR Annual Review 2020–21*

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For enquiries about this publication and general information, please contact:

Australian Centre for International Agricultural Research
GPO Box 1571 Canberra ACT 2601
Phone: +61 2 6217 0500
Email: aciar@aciar.gov.au
Website: aciar.gov.au

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Cover photo: Ms Glory Dee Romo, Mr Jon Marx Sarmiento, Ms Geraliza Wahing with Mrs Amarylis Bisnar at the Bisnar mango farm in Poblacion Peñaplata, Island Garden City of Samal, Philippines. Photo: Ryam Yap.

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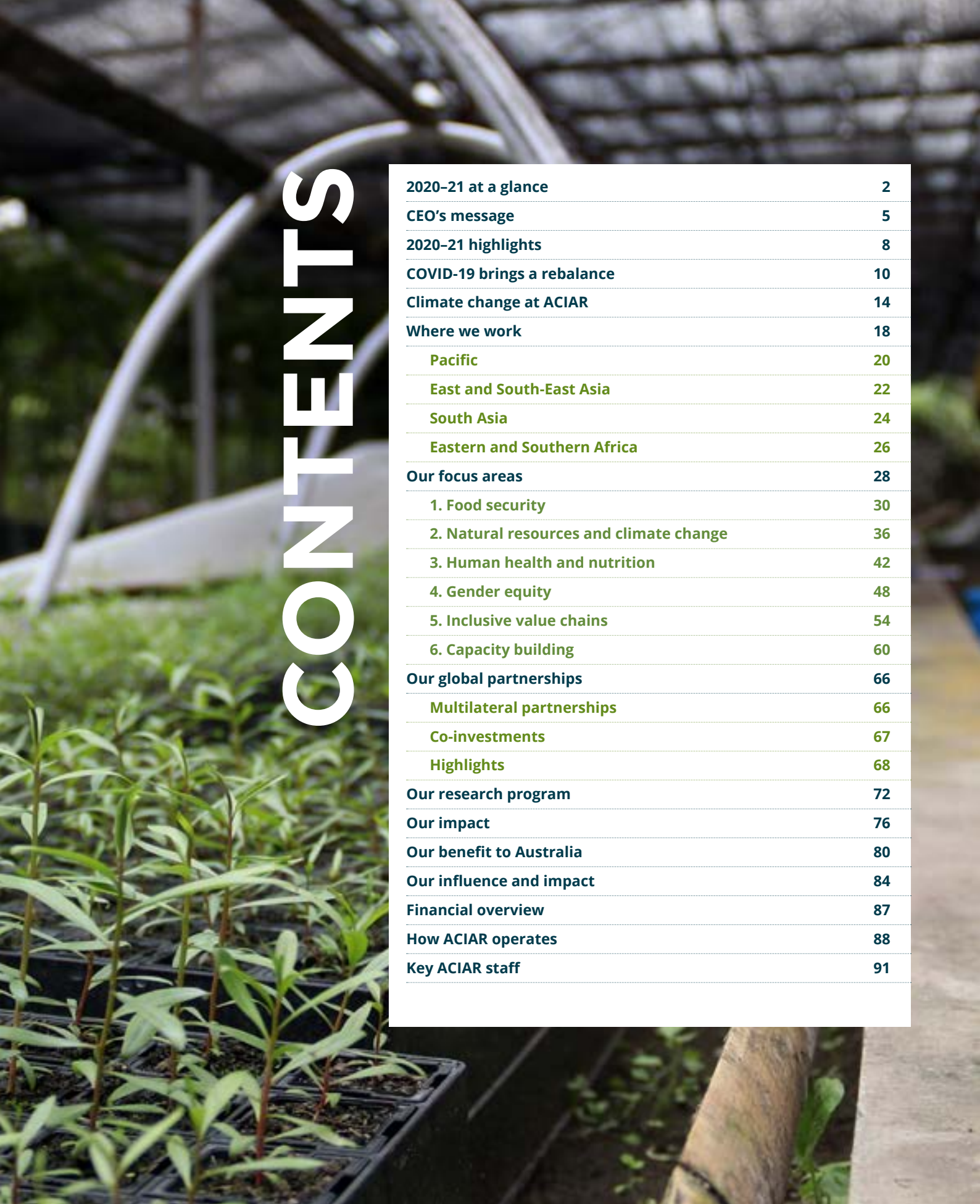

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2020–21 at a glance

A$51 million
invested in bilateral research programs

A$104.7 billion
total benefit from ACIAR research project investments since 1982*

A$99.7 billion
total benefit to developing country partners from ACIAR research project investment since 1982*

34
countries across the Indo-Pacific region

228
bilateral research projects

52
commissioned organisations leading ACIAR projects

Bougainville farmer Rodney Panaki in his cocoa block.

*Based on analysis by the Centre for International Economics of 169 bilateral projects covered in 56 Impact Assessment studies (2019).

A$17.40
economic return for each dollar invested in bilateral research project since 1982*

A$5 billion
total benefit to Australia from ACIAR research project investment since 1982*

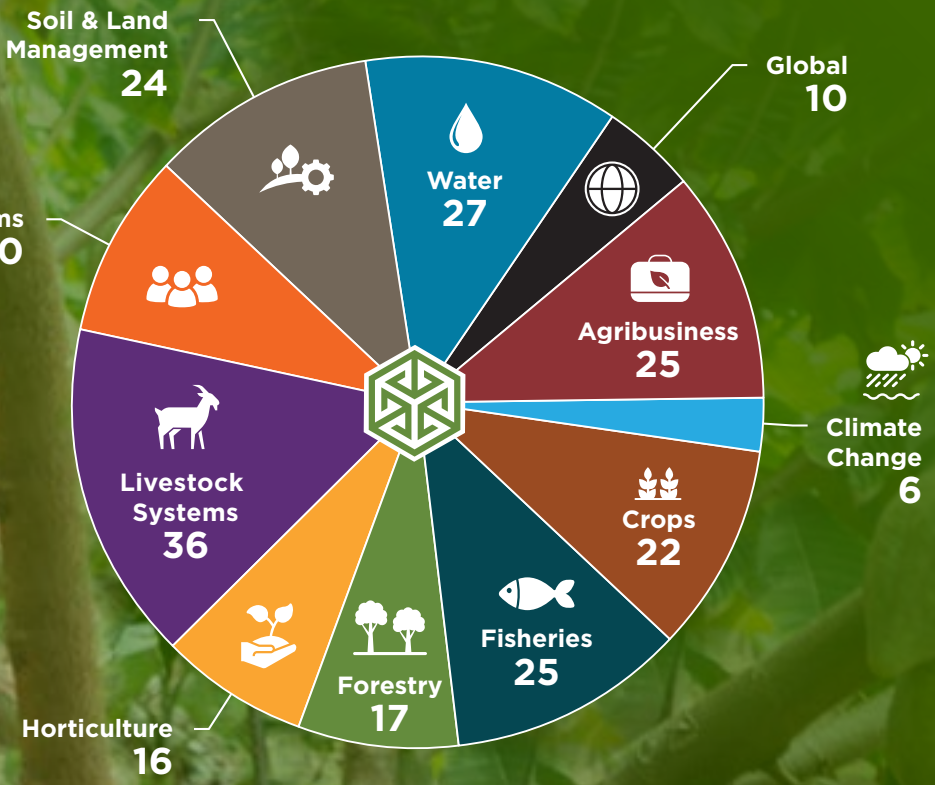
77
ACIAR staff

> 400
project partners

> 600
active fellowship alumni

139,515
website users

ACIAR research programs and number of projects



Enterprises based on beekeeping offer many opportunities for smallholder farmers. In Fiji there is strong domestic demand for honey with potential for the export of honey and beeswax.

A beekeeper in Fiji tends to his hive. Photo: Lorima Vueti.

CEO'S MESSAGE

The 2020–21 year has been challenging to say the least. The COVID-19 pandemic has continued to cause health and economic crises across the globe, and it has disrupted global food systems.

Many ACIAR partner countries remain in various states of lockdown and have been deeply affected. We are acutely aware of the challenges this presents to our international colleagues, friends and research partners, and the research and development sector more broadly.

Throughout this challenging time, the safety of our people, and those of our partners, has been our first focus. We have continued our work helping countries and communities to grow more and healthier food, improve nutrition and reduce poverty. It has required considerable flexibility and responsiveness in the way projects are developed and managed.

To our whole network, I say thank you. It is people's commitment and dedication that have made continuing ACIAR work possible.

Every ACIAR research project has had to be reorganised. Virtually every milestone has had to be adjusted. Every budget has had to be changed. In many cases, project personnel have had to change too.

Travel restrictions are obviously affecting how ACIAR research projects are being delivered. In many cases, this has resulted in positive changes that are improving how work is done. This is especially true where project teams are well established, and in-country partners are stepping up to take on more responsibilities and leadership.

To understand and better respond to the impacts of the pandemic, ACIAR undertook a 3-stage assessment. The first stage was a rapid appraisal looking at food systems security, resilience and emerging risks in the Indo-Pacific in the context of COVID-19. It involved significant input from people on the ground in partner countries. We then did a detailed assessment of vulnerabilities, impacts and opportunities for action.

The findings of the assessment have provided excellent insights, ensuring that ACIAR and our partners have authoritative, comprehensive and up-to-date understanding of how the pandemic is affecting agricultural systems in our partner countries. This information has been used by ACIAR and our partners to formulate and prioritise our responses.

We are now working on 4 high-priority projects with our partners as part of our response.

Already, our teams have shown great flexibility in identifying creative and effective ways to support ongoing research. Our support through online delivery of our fellowship and capacity building programs has also continued.

A Tay ethnic farmer learning about growing temperate fruits in Vietnam.

Throughout the pandemic, the ACIAR Country Network has continued to perform superbly. The investments we have made over recent years to attract outstanding locally engaged staff to our 10 country offices and to train the network have proven crucial. Many of our in-country staff are still working from home in challenging circumstances due to the COVID-19 situation in their country, yet remaining very productive for ACIAR.

To support these adaptations, ACIAR is developing new procurement and contracting systems. We have also delivered new small grant programs and we are building a new online learning system.

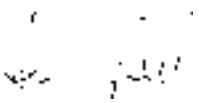
Thanks to our online connectivity, ACIAR has also continued to participate in global events.

Our approach to partnerships was the focus of a United Nations Food Systems Summit (UNFSS) Dialogue we co-convened in May – Multi-stakeholder Partnerships for Scaling Agricultural Innovation. The second Dialogue we co-convened was on food loss research, during which we launched the new Food Loss Research Program – a partnership between ACIAR and Canada's International Development Research Centre (IDRC). A great diversity of people from different agencies across many countries were able to participate online.

In March, ACIAR stepped into the role of chairing the Global Research Alliance on Agricultural Greenhouse Gases. It's an honour to take on this role after our friends in Indonesia. This is an exciting development for ACIAR because, in the past year, we established our stand-alone Climate Change Research Program in line with our 10-year strategy that identifies addressing climate change as one of 6 focus areas.

ACIAR has long been investing in research to support climate change adaptation across our entire research portfolio. Our new Climate Change Research Program gives this important issue a higher profile and refreshed mandate, with more emphasis on mitigation than previously. This reflects the priorities of our partner countries, many of whom have ambitious Nationally Determined Contributions under the Paris Agreement to reduce emissions from agriculture and forestry.

I am proud of the ACIAR network's ability to adapt to the ongoing situation, and I know that we will work together to ensure that our effort continues to help countries and communities grow more and healthier food more sustainably, improving nutrition and reducing poverty.



Professor Andrew Campbell
Chief Executive Officer

Throughout the COVID-19 pandemic, the ACIAR Country Network has continued to perform superbly. Investments made over recent years to attract outstanding locally engaged staff to country offices and to train the network have proven crucial.

2020–21 highlights

JULY 2020

New appointments welcomed to the Policy Advisory Council for International Agricultural Research

ACIAR alumni networking tool launched online

AUGUST

Foreign Minister Senator the Hon. Marise Payne and Agriculture Minister the Hon. David Littleproud MP launched the joint ACIAR–DFAT One Health research program focused on zoonotic diseases across South-East Asia and the Pacific

Dr Veronica Doerr joined the ACIAR team as Research Program Manager for Climate Change

SEPTEMBER

New appointments welcomed to the Commission for International Agricultural Research

DECEMBER

Soil mapping in the region moved online with the launch of the Pacific Soils Portal

First face to face meeting of new Commission for International Agricultural Research

JANUARY

South Asia Regional Manager Dr Pratibha Singh is awarded the High Commissioner's XI award for Distinguished Service in 2020 by High Commissioner to India, HE Barry O'Farrell

FEBRUARY

ACIAR hosted a webinar to hear how Australian farmers are mitigating greenhouse gas emissions, and how these strategies could go global

The inaugural Pacific Agriculture Scholarships and Support Program recipients are awarded

MARCH

The ACIAR–Bangladesh Collaboration Strategy 2021–2030 is launched virtually with High Commissioner to Bangladesh, HE Jeremy Bruer

Meryl Williams Fellowship totals 42 women

APRIL

ACIAR virtually hosted the 10th annual meeting of the Council for the Global Research Alliance on Agricultural Greenhouse Gases

ACIAR hosted the biennial Project Leaders meeting with more than 170 project leaders joining online

Australian High Commissioner to Fiji HE John Feakes launched launched the new ACIAR Pacific Agriculture Scholarships and Support program in Fiji

Australian High Commissioner to Fiji HE John Feakes co-opened the first Pacific Plant Health Laboratory at The Pacific Community (SPC) with Policy Advisory Council member Dr Audrey Aumua

OCTOBER

32 researchers in the Philippines officially graduated from their year-long Agribusiness Masterclass

Professor Wendy Umberger appointed President of Policy Advisory Council

Vietnamese and Australian business, research and policy leaders formed the inaugural ACIAR Agribusiness Reference Group in Hanoi

A MoU (Memorandum of Understanding) between ACIAR, the Syngenta Foundation for Sustainable Agriculture and the Crawford Fund is signed

NOVEMBER

ACIAR hosted a live discussion event for the launch of the Stage 2 COVID-19 and Food Systems in the Indo-Pacific Report

ACIAR signed a new partnership agreement with Australia's Plant Biosecurity Research Initiative

12 John Allwright Fellows visited ACIAR House as part of their postgraduate studies in Australia

Dr Clemens Grünbühel joined ACIAR as Social Systems Research Program Manager

Professor Andrew Campbell is reappointed ACIAR CEO until July 2023

MAY

The new John Dillon Fellowship cohort was officially welcomed

JUNE 2021

ACIAR supports the 2021 Joint Conference of Soil Science Australia and The New Zealand Society of Soil Science, in Cairns

COVID-19 brings a rebalance

The COVID-19 pandemic dominated almost every aspect of daily life across the globe through 2020–21. Ongoing challenges have been amplified by the pandemic. These include challenges in growing and selling food, reduced incomes, biosecurity threats and greater exposure to the impacts of climate change.

As the global situation unfolded, ACIAR moved quickly to pivot our research program to best support our people and partners, and maintain a critical focus on serious and emerging regional threats to food security.

Twelve months on, COVID-19 is continuing to affect ACIAR partner countries heavily, with many constraints on what ACIAR staff and partners are able to do in-country.

In some cases collaboration with international partners has been difficult. In other cases these limitations have created opportunities to refresh and reset our approach to best support in-country partnerships and outcomes that address both the immediate challenges and food security into the future.

Balancing research design and leadership

As a result of the impact caused by the COVID-19 pandemic, ACIAR chose to accelerate a rebalance between designing and leading research.

The capacity to adapt to working remotely differs across regions, but in many instances ACIAR project teams are increasingly handing over responsibility to in-country partners.

Where in-country COVID-19 restrictions have allowed, local research teams have stepped up to take on extra responsibilities, ensuring research can continue. Further, strong long-term relationships have allowed the effective uptake of online tools, and a reframing of previous approaches to project management and capacity building.

Adapting to online

In many areas, ACIAR has activated a range of online tools to maintain relationships and research momentum despite travel restrictions. These include:

- An online learning platform where PhD students and recipients from partner countries who typically have the opportunity to obtain postgraduate qualifications at Australian tertiary institutions through ACIAR John Allwright and John Dillon Fellowships can connect for capacity building activities.
- Online research activities and project milestones, such as inception meetings and mid-term and end-of-project reviews.
- Online learning opportunities for the Pacific Plant Biosecurity Partnership to ensure continued connection and sharing of knowledge and expertise to strengthen plant biosecurity networks.

Sorting vegetables for local families as part of a project to improve agricultural practices in the Philippines.

Responding to challenges

The Alumni Research Support Facility (ARSF) was announced in April 2020 as a swift response to the COVID-19 pandemic. It exceeded expectations, funding 38 small research projects across 14 countries with grants of up to $20,000 for a 12 month duration. The projects, designed and managed by ACIAR Alumni, build resilience and respond to the challenges the pandemic has presented to agriculture systems in ACIAR partner countries.

A notable success for the proactive gender policies of ACIAR is that, based entirely on the merit of the project applications, exactly 50% of the projects were awarded to women. The second phase focuses on researchers from the Pacific and Mekong countries, supporting an additional 25 research projects through 2021, with enhanced mechanisms to support collaboration with Australian scientists.

Focusing on food security

Throughout the year, ACIAR ensured critical attention continued to be given to the impacts of COVID-19 on food systems. ACIAR focused on the associated responses and opportunities for supporting smallholder farmers in the Indo-Pacific.

COVID-19 and food systems in the Indo-Pacific: An assessment of vulnerabilities, impacts and opportunities for action (ACIAR Technical Report No. 96) was released in November and warned that the pandemic is exacerbating existing threats to food security that will have long-term implications for the Indo-Pacific region.

Produced by scientists from the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Australian National University (ANU), working with partners in the target countries, the report marked the second stage of a three-phase response led by ACIAR to identify opportunities for intervention.

The report will assist not only Australia's food security response in the Indo-Pacific but also other national governments and NGOs, as the region faces one of the biggest threats to food security in living memory.

Plant Doctors are using innovative tools and specifically designed technologies (including remotely identifying plant health problems) to support farmers.

CASE STUDY

Call the doctor

A team of 'Plant Doctors' in the Pacific islands is finding new ways to help farmers diagnose and treat plant disease remotely while in-person clinics are on hold.

In Pacific island countries, steps have been taken by authorities to limit the spread and impact of COVID-19, including lockdowns, the closure of international borders, physical distancing and allowing only essential services to operate.

But a new cadre of plant health specialists – Plant Doctors – has been deemed an essential service and continues to provide expertise and services to local farmers, albeit remotely.

Plant Doctors comprise a mix of local agriculture extension officers and members of civil society groups and agricultural non-government organisations trained under an ACIAR-supported project. The project is a partnership between ACIAR, the University of Queensland and the Pacific Community (SPC) Land and Resources Division. Together they support Plant Doctors to deliver plant health services to farmers in Fiji, Tonga, Samoa, Papua New Guinea and Solomon Islands.

Under normal circumstances, farmers would take their unhealthy plants to farmer-friendly plant health clinics for a diagnosis and recommended treatment from a Plant Doctor.

But since the onset of COVID-19, in-person clinics have been cancelled. Consequently, Plant Doctors are using innovative tools and specifically designed technologies (including remotely identifying plant health problems) to support farmers.

In Fiji, Agricultural Fieldman Specialist Maca Vakaloloma works at the Lakena Agriculture Office in Nausori, in Eastern Viti Levu, and attended preliminary plant health clinic training to become a Plant Doctor.

Trainees are provided with interactive training in carrying out basic diagnosis, symptom description, clinic management, keeping records and preparing samples for diagnosis.

Ms Vakalololma said it had been life-changing for her everyday work. She said she was amazed at how quickly she could now provide efficient and effective services and advice to local farmers in a short period and remotely.

'Before the training I would visit a farmer who would be having issues with his crop. I would have to take samples and then go back to my office and spend a few weeks researching and trying to diagnose the problem. Now, after this training, I can easily search the symptoms of a diseased plant on an app or upload a picture on the WhatsApp group and I can discuss the problem and solutions with other Plant Doctors in Fiji and Australia.'

Agricultural Fieldman Specialist Maca Vakaloloma with Fijian farmer Cheung Ho Fai, diagnoses his suspected diseased Dalo plants. Photo: Dave Lavaki.

Climate change at ACIAR

Supporting and learning with our partners to address climate change is not new for ACIAR but having a focus on transformation is.

The new Climate Change Research Program was created in late 2020 to complement existing work on climate change across the rest of the ACIAR portfolio. The new program deliberately concentrates on how to take action on transformations. These are fundamental shifts in how livelihoods and food production, and the social and institutional systems that sustain them, are organised and able to be adapted.

Systems transformation represents a distinctly different approach. It has a strong focus on social and institutional change, supported by technical analyses, to create fundamentally new ways in which livelihoods are sustained and food is produced. The research strategy aims to progress the science and practice of 3 pillars needed to support transformation:

- Co-governance of adaptation pathways – formal and informal ways to align and sequence the actions of governments, businesses and communities to collectively shift food and livelihood systems
- Adaptive learning – equipping governments, businesses and communities with the tools and skills to rapidly adjust plans and actions in response to shifting baseline conditions
- Institutional mechanisms – development and use of global and national market mechanisms to provide key levers for systems change, ensuring they also benefit small-scale producers

Across the program there is an emphasis on locally led approaches, interdisciplinary research, gender and social equity, and building the capacity of Australian and partner country researchers and stakeholders to engage in systems thinking. The program aims to translate sciences that often seem conceptual (like resilience and systems science) into tangible projects and pathways for change. The program also contributes to global, multilateral collaborations and dialogues on climate change, emphasising knowledge sharing to accelerate climate response.

Adaptation Research Alliance

Through the Climate Change Research Program, ACIAR has been collaborating with more than 30 other organisations around the world to scope and develop a new global research alliance, the Adaptation Research Alliance. The Alliance is expected to bring together researchers, research funders and development funders (or 'action funders') to catalyse and scale investment in action-orientated, locally led climate change research, with a particular focus on sustainable development. Building the Alliance to date has involved working with existing partners like the International Development Research Centre (IDRC) and the CGIAR as well as potential new partners like the Least Developed Countries Universities Consortium on Climate Change and the International Centre for Climate Change and Development. ACIAR signed the Adaptation Research Alliance's Gobeshona Declaration in January 2021, declaring our intent to co-develop the Alliance. It was launched at the 2021 UN Conference of the Parties on Climate Change (COP26) in November 2021, where the Alliance became the knowledge partner to the Adaptation Action Coalition, which Australia has joined as a member state.

Global Research Alliance on Agricultural Greenhouse Gases

The Global Research Alliance on Agricultural Greenhouse Gases (GRA) is a global collaboration finding ways to grow more food without increasing greenhouse gas emissions. ACIAR, on behalf of Australia, hosted the 2021 Annual Council Meeting of the GRA in March 2021 via webcast. The meeting involved delegates from more than 50 countries and 20 partner organisations.

ACIAR represents Australia on the GRA and at this meeting ACIAR CEO Professor Andrew Campbell assumed the role of Chair of the GRA Council. This is a significant position that provides Australia with an opportunity to offer leadership on climate change mitigation research in the Indo-Pacific and is an opening to engage more broadly on international climate change mitigation efforts.

Australia's objectives as GRA Chair align with whole of government initiatives in our region, particularly climate change mitigation research, identifying actions that provide mitigation-adaptation co-benefits, providing particular support in the Pacific, and assisting countries in the Indo-Pacific region to deliver their agriculture Nationally Determined Contributions commitments under the Paris Agreement.

A farmer with her shallot harvest in Bantul, Yogyakarta, Indonesia.


89

CASE STUDY

Fixing the food gap

There is a sense of urgency underpinning the newest ACIAR project to transform coastal food systems in the Pacific region. With parts of low-lying islands becoming permanently flooded, coral reefs declining and human populations increasing, pressure is mounting on fisheries productivity.

Local authorities forecast a supply deficit in the region's fisheries of 115,000 tonnes/year in the next 10 years. A multi-stakeholder Small Research Activity (SRA) has identified 'hot spots' where the impact of climate change will be most severe. It developed decision-making tools to enable local communities to lead their own transformations.

Having already tackled aspects of this challenge in Solomon Islands, Papua New Guinea (PNG) and on islands in the Torres Strait, CSIRO Land and Water's Dr James Butler is under no illusion that the process will be simple.

'We want to integrate different forms of knowledge to anticipate this complex problem, find solutions and scale that process out across the Pacific, as well as encourage communities to drive the changes they want, to secure a positive future for themselves. There is a lot of enthusiasm for this,' said the project leader.

ACIAR has enlisted New Zealand's Cawthron Institute (which specialises in aquaculture research and marine and freshwater resource management) and AgResearch New Zealand to undertake a desktop review of options for integrating coastal food systems such as aquaculture, fisheries and agriculture to increase productivity and ensure sustainability.

The project will consider the future implications of climate change and COVID-19 impacts, combined with trends in population dynamics and diet, to identify where food and nutrition deficits are likely to be greatest and assess the capacity for transformation in these hot spots.

Dr Butler said a 'food gap' now existed in the Pacific region, where demand was exceeding local supply. He said this was prompting the growing population to rely on imported processed food that was low in nutrition and contributing to a rise in diseases such as diabetes and obesity.

'We are investigating circular bioeconomy principles that involve recycling organic waste to create inputs for production and more efficient nutrient cycling, as well as developing metrics to measure and communicate the benefits of different combinations for social outcomes, to align with the United Nations Sustainable Development Goals.'

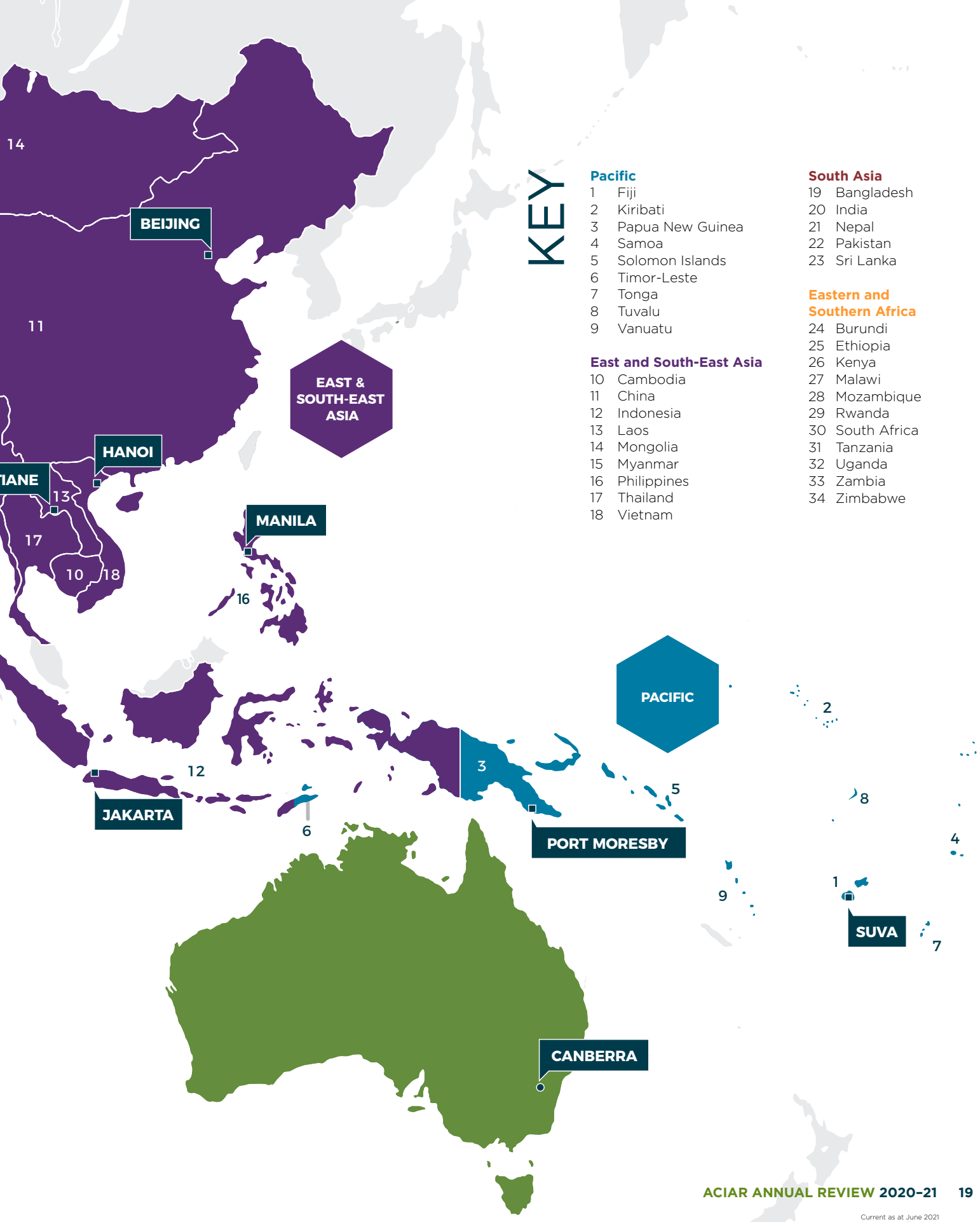
Other SRA partners are the Pacific Community (SPC) and the University of Technology Sydney. Outcomes of the project will be used to design a larger multi-stakeholder project that will support local communities with decision-making processes and information about transformative options. The goal is to enable them to identify and act on the steps needed for a transformative change.

In Fiji, coastal fisheries contribute to food security and nutrition, and support livelihoods. Photo: Lorima Vueti.

Where we work

Partnering for a better future for our neighbours and our world

We work with partners from around Australia and the world, including research organisations, universities, private sector and governments. In our bilateral research programs, we are proud to manage a portfolio of 228 projects in 34 countries in the Indo-Pacific region.



Current as at June 2021

Pacific

65
ACIAR projects

9
countries

5
locally based staff

A$14.6 million
invested into research projects

COUNTRIES WHERE WE WORK

Fiji | Kiribati | Papua New Guinea | Samoa
Solomon Islands | Timor-Leste | Tonga | Tuvalu | Vanuatu

Mr Nitesh Nand, Plant Health Field Technician at the ACIAR supported lab on the SPC campus in Fiji. Photo: Dave Lavaki.

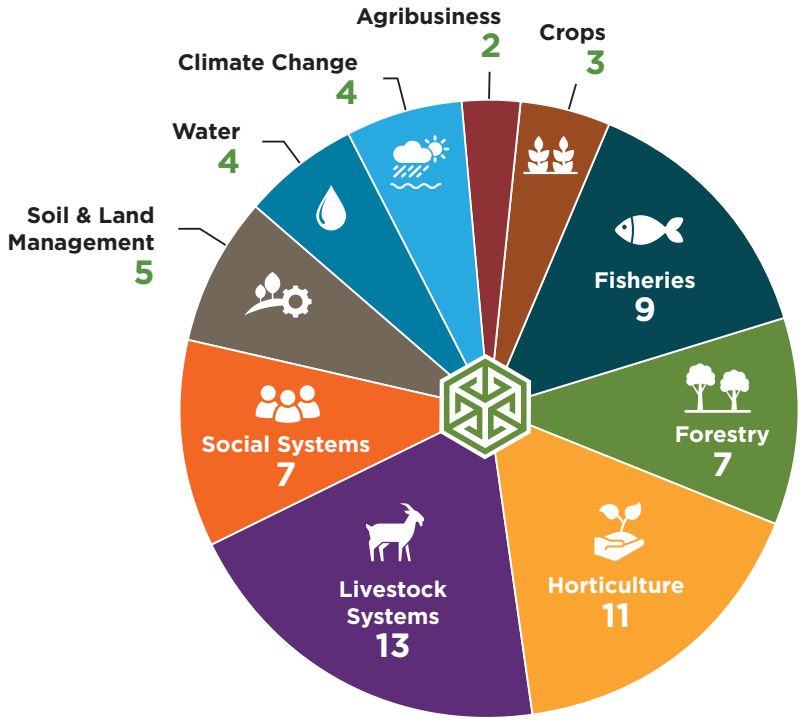
28%
of ACIAR project investment

20
organisations commissioned leading ACIAR projects

45
active fellowship alumni

The ACIAR Pacific region encompasses 9 Pacific island countries, including Papua New Guinea and Timor-Leste. The regional strategy focuses on projects in biosecurity, climate-resilient livelihoods and opportunities for stronger agribusiness development in fisheries, forestry, crops, horticulture, livestock, and soil and land management.

Projects by research program



NOTE: Chart will not always reflect the sum of total projects per program as it shows projects by region. If a project is in multiple regions, it will be counted for each region.

Region highlights

September 2020: The Australian High Commissioner to Fiji HE John Feakes officially launched the expanded ACIAR Pacific Agriculture Scholarship and Support (PASS) Program on 10 September 2020. The PASS program now offers up to 8 scholarships at the University of the South Pacific (USP), 3 scholarships at Fiji National University for Master of Science research programs in target areas, and 2 PhDs at USP.

October 2020: The ACIAR Biosecurity Containment Level 3 plant health laboratory was officially launched by Australian High Commissioner to Fiji HE John Feakes and former SPC Deputy Director General Dr Audrey Aumua on 29 October 2020. The facility, which is a first for the Pacific region, supports regional food security and is designed to be the regional centre of excellence in pest and disease diagnostics. The laboratory is invaluable in developing solutions to manage and control emerging biosecurity threats.

December 2020: ACIAR Regional Manager for the Pacific Ms Florence Rahiria attended the 2020 National Agriculture Symposium in Suva, Fiji. The Symposium was organised by the Fiji Institute of Applied Studies (FIAS) and supported by ACIAR, the Fijian Ministry of Agriculture and Fiji National University. The symposium offered a platform for local scientists to present their research findings and share their knowledge with participants.

East and South-East Asia

116
ACIAR projects

9
countries

12
locally based staff

A$23.8 million
invested into research projects

COUNTRIES WHERE WE WORK

Cambodia | China | Indonesia | Laos | Mongolia
Myanmar | Philippines | Thailand | Vietnam

Vidal Moreno feeds his goats at his farm in the Province of South Cotabato, Mindanao, Philippines.

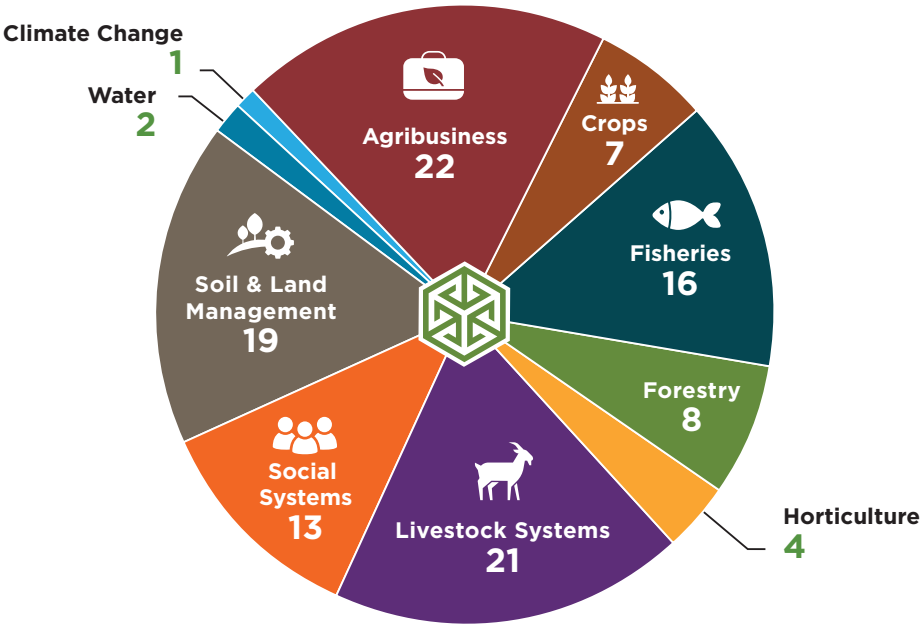
46%
of ACIAR project investment

34
organisations commissioned leading ACIAR projects

80
active fellowship alumni

ACIAR partners with 9 countries in our East and South-East Asia region. We have enjoyed an enduring relationship with these countries, which is largely and traditionally characterised by bilateral country research partnerships. Our work in the region is underpinned by common trends to create opportunities for greater regional cooperation and trilateral collaboration in research.

Projects by research program



Region highlights

September 2020: More than 30 research and agribusiness specialists from academia, private sector and farmer organisations across the Philippines completed a year-long Agribusiness Masterclass. Now, as agribusiness champions, the graduates have the knowledge and skills needed to apply market, consumer and value chain research methods to create more inclusive market and supply chains to improve food security in the country.

January 2021: ACIAR held a Partnership Health Check meeting in January 2021 with the Philippine Council for the Agriculture, Aquatic, and Natural Resources Research and Development of the Department of Science and Technology (DOST-PCAARRD) team led by Executive Director Dr Reynaldo Ebora. The two agencies reflected on the challenges and successes of the partnership in the past year, and opportunities for collaborations, particularly new and emerging research on inclusive value chains, dairy sector development, 'One Health', marine and aquatic resources, coconut, and communications.

June 2021: More than 1,500 participants across 11 countries attended the first South-East Rubber-based Cropping Production Forum held in June 2021. The event brought together policymakers, research and development workers, farmers, and other stakeholders across South-East Asia to discuss and share knowledge, technologies, and experiences in the development of rubber production systems.

South Asia

43
ACIAR projects

5
countries

4
locally based staff

A$6 million
invested into research projects

COUNTRIES WHERE WE WORK

Bangladesh | India | Nepal | Pakistan | Sri Lanka

Salvador Rosal on their farm in the mountains of southern Philippines. Photo: Jeoffrey Maitem.

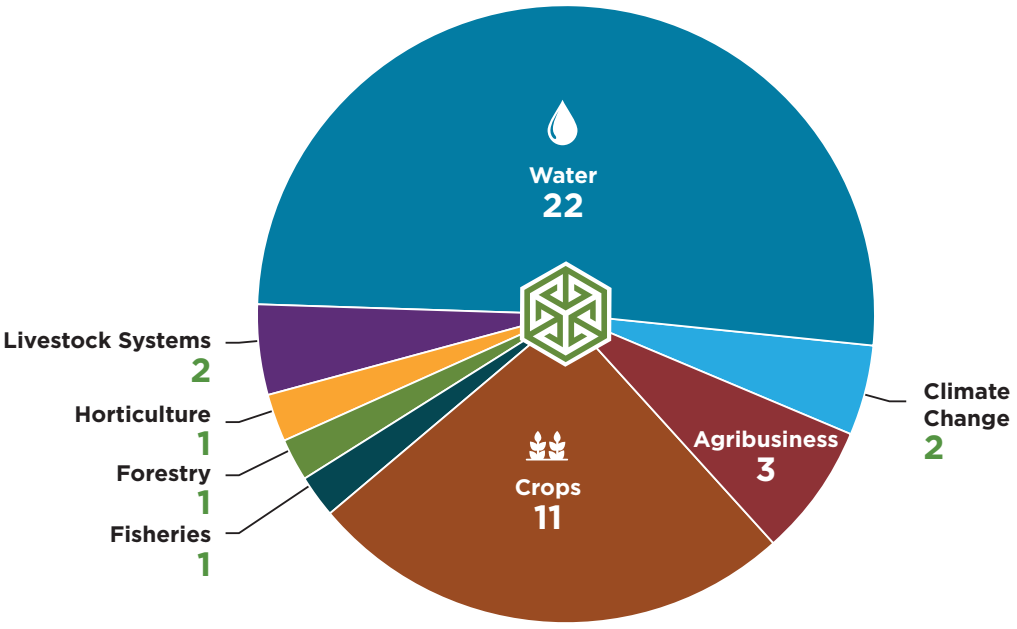
12%
of ACIAR project investment

13
organisations commissioned leading ACIAR projects

15
active fellowship alumni

Our South Asia region takes in 5 countries, which are important strategic partners for Australia. The regional strategy focuses on communities, production systems and resource management. We seek to identify appropriate reform policy, increase adoption of technology, improve productivity and livelihoods in marginalised communities, and improve productivity of crop, livestock, forestry and fisheries systems.

Projects by research program



Region highlights

January 2021: First signed in 2015, ACIAR and the Krishi Gobeshona Foundation (KGF) refreshed and renewed their Memorandum of Understanding (MoU) in January 2021. KGF is an important ACIAR partner in Bangladesh. The MoU supports in-country agricultural research and development and frames how the organisations jointly support and conduct research, development and other activities to improve food security.

March 2021: An ACIAR-funded project to assist the modernisation of Pakistan's horticultural sector has resulted in legislative change in the country's state of Punjab and drawn support from the office of Pakistani Prime Minister Imran Khan. In March 2021, the *Punjab Agricultural Marketing Regulatory Authority Act 2018* was amended to include some of the project's key recommendations.

March 2021: The ACIAR–Bangladesh Collaboration Strategy 2021–2030 was launched on 24 March 2021 at a virtual ceremony. It outlines key agricultural research priorities for the coming decade: crop improvement, improved farming systems, water management, soil fertility and management, markets, and agricultural mechanisation. It also emphasises the continued importance of building research capacity within Bangladesh.

Eastern and Southern Africa

22
ACIAR projects

11
countries

2
locally based staff

A$7.4 million
invested into research projects

COUNTRIES WHERE WE WORK

Burundi | Ethiopia | Kenya | Malawi | Mozambique | Rwanda
South Africa | Tanzania | Uganda | Zambia | Zimbabwe

Makarius Mdemu inspecting the harvests at Magozi scheme, Tanzania.

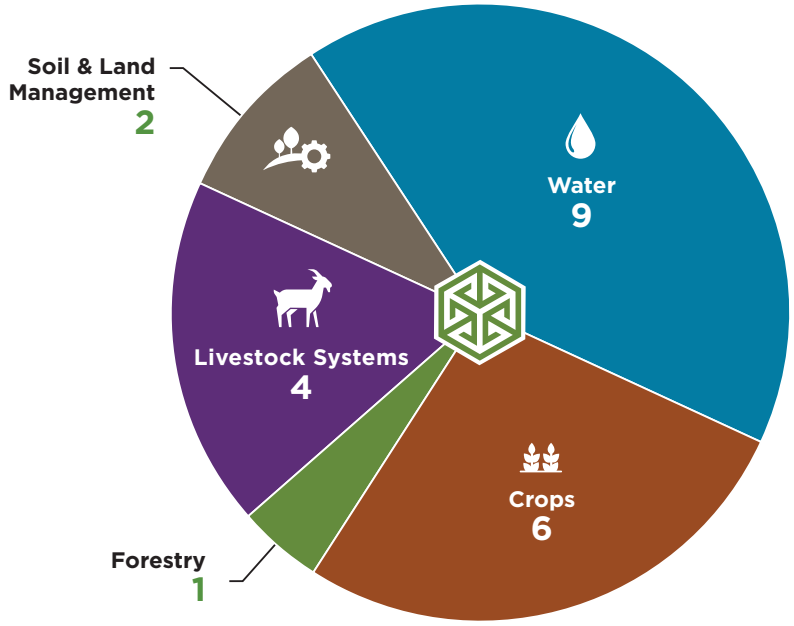
15%
of ACIAR project investment

16
organisations commissioned leading ACIAR projects

4
active fellowship alumni

The ACIAR region of Eastern and Southern Africa currently takes in 11 countries where there are ACIAR-supported projects and programs. Our footprint, however, extends beyond these borders due to our association with the 4 CGIAR centres and many regional organisations in sub-Saharan Africa. The regional strategy focuses on promoting regional collaboration while helping create new opportunities, particularly for Africa's smallholder farmers.

Projects by research program



Region highlights

September 2020: The ACIAR Africa office participated in the online African Green Revolution Forum (AGRF) summit 2020 and pre-events from 7 to 11 September 2020. The AGRF is the world's premier forum for African agriculture, bringing together stakeholders in the agricultural landscape to take practical actions and share lessons that will move African agriculture forward.

December 2020 to May 2021: ACIAR, with its partners in Tanzania, developed a video highlighting work in the country to transform smallholder irrigation. By using soil moisture and nutrient monitoring tools, farmers have reduced the time they spend irrigating by up to 65%, allowing more time to do other agricultural tasks such as improving farm management. This helps to increase food security and improve farmer livelihoods.

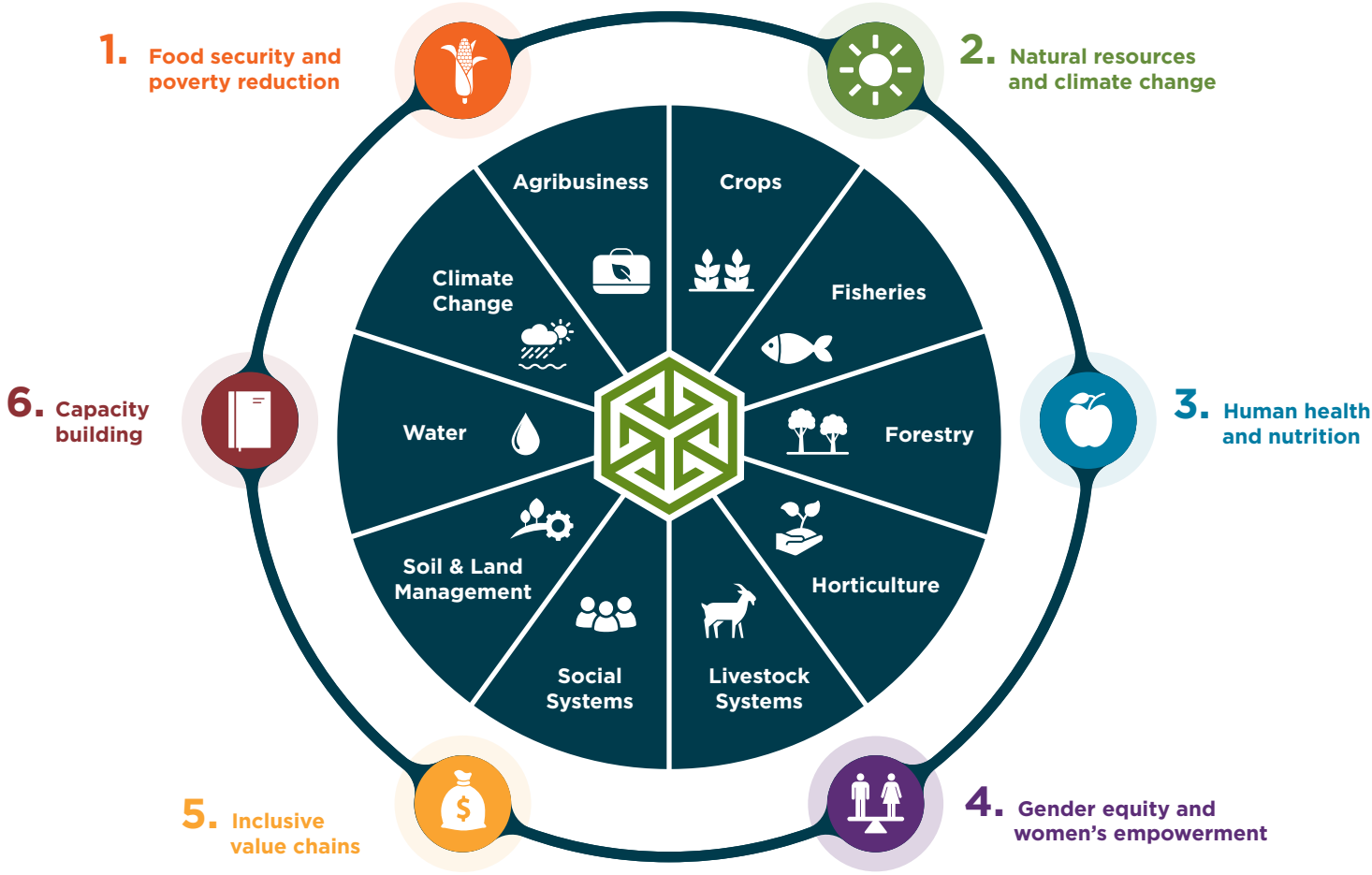
February 2021: ACIAR Africa staff together with regional project partners participated in a webinar hosted by the Pan-Africa Bean Research Alliance (PABRA) to catalyse investment in bean research to increase resilience, gender equality and improve nutrition. Themed around the World Pulses Day 2021, the webinar sought to promote a discussion on the contribution of pulses to healthy diets.

April 2021: ACIAR Africa joined partners from Ethiopia's Ministry of Agriculture, international consulting company UNIQUE and the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) in Ethiopia for a stakeholder evaluation workshop on national greenhouse gas (GHG) data gap-filling protocols. The workshop sought to evaluate the outcome of a pilot study of the national GHG inventory for the livestock sector, to share knowledge and disseminate project methods and results.

Our focus areas

Our work is guided by 6 strategic objectives, outlined in our 10-Year Strategy 2018–2027.

These objectives are more relevant and urgent than ever and reflect our work to reduce poverty and improve livelihoods through agricultural research-for-development. While each project is managed within one of our 10 research programs, it also addresses several or all strategic objectives. The following section outlines each strategic objective, its relevance and highlights for the year.



Goals for global action

In 2015, world leaders signed on to the United Nation's Sustainable Development Goals, a set of 17 goals designed to end poverty, fight inequality and stop climate change.

Agriculture is essential for achieving these goals and is central to the ACIAR vision of reducing poverty and improving livelihoods. We actively contribute to 12 of the 17 Sustainable Development Goals, as pictured above, through our collaborative international research partnerships.

1. Food security

 Thongkoun Phimmavong has been fishing in the Mekong River in Laos for more than 40 years. Photo: Majken Soegaard.

Improving food security and reducing poverty among smallholder farmers and rural communities

Food is a basic human right. But one in 10 people – 700 million people around the world – do not have enough food. Poverty and food security are intricately linked, and hunger is on the rise. Without an income or resources to grow food, more people are chronically undernourished or malnourished.

Scarcity of natural resources, increasing populations and climate change are placing huge burdens on food security. Investing in smallholder farmers is an effective way to reduce poverty, hunger and malnutrition, particularly in rural areas, where most of the world's poorest people live. We must simultaneously increase the productivity and incomes of smallholder farmers while building more sustainable and resilient food and agricultural systems.

Our work

ACIAR works throughout the Indo-Pacific region to improve food security and reduce poverty among smallholder farmers and rural communities. This contributes to our mission to improve livelihoods and make production systems more sustainable.

We partner with leading Australian research institutions to invest in programs that:

- increase productivity, sustainability and utilisation of major crops by applying genetic and agronomic innovations to cropping systems
- develop appropriate technologies and policy recommendations to support productive aquatic farming systems and sustainable fisheries
- develop more productive, profitable and sustainable livestock systems, including breeding and raising healthy animals
- improve the productivity, profitability and sustainability of fruit, vegetable, ornamental and beverage crop production in low- and middle-income countries
- improve production practices to minimise pre- and post-harvest loss
- adapt soil, water and nutrient management, and other agronomic interventions, to local conditions
- contribute to income and food security by assisting smallholder farmers to generate saleable timber, fruit, nuts and other forest products in agroforestry systems and smallholder woodlots.

Highlights

ACIAR makes important contribution to modernising plant breeding

Eastern and Southern Africa | Global | University of Queensland

ACIAR is contributing to the modernisation of plant breeding in Africa to increase the impact of improved crop varieties released by breeding programs. This project focuses on practices and methods applied by plant breeders in the National Research Systems, complementing the parallel efforts on infrastructure and management, funded in the CGIAR by the Gates Foundation, USAID and others. The project has released tools and templates to support plant breeders in designing the product profile for which they are breeding. Defining a market-responsive product profile as the target of the breeding effort is critical to impact. Breeders need to release varieties that farmers will want to grow (and be better off from growing) and consumers will want to buy. On 26 August 2020, the 'Product Profile Overview and Practitioners' Guide' was launched at a public virtual event spanning 3 continents. As a result of the project, about 400 African plant breeders are now part of a community of practice trying to make all breeding 'demand-led'.

Fish 'ladders' to increase fish stocks

Indonesia | Fisheries | Charles Sturt University

A 'fish ladder' that allows fish to traverse rivers and their tributaries, despite obstacles such as low-level dams and weirs built to control river flows for irrigation, has helped increase fish stocks in Laos and will now be introduced to Cambodia and Indonesia. With ACIAR support, the ladders, also known as 'fish passes', have helped to improve river connectivity and fish migration by helping fish get to spawning or feeding areas. This has led to increased access to fish, a significant source of protein and micronutrients, for people living in the Mekong region. Indonesia and Cambodia have seen a rapid decline in fish due to the building of dams and weirs for irrigation, which has impacted fishing communities and their food security. The project teams will start by developing partnerships between fisheries and irrigation agencies responsible for such infrastructure, including policymakers, which was the key to success in Laos.

New program to reduce food loss and improve food security

Asia, Africa and Pacific | Global

A new $3 million Food Loss Research Program was launched as part of an Australian–Canadian partnership. The program, co-funded by ACIAR and Canada's International Development Research Centre (IDRC), will support projects in Asia, Africa and the Pacific region. In developing countries, most food losses occur during growing, harvest, processing, storage and transportation – before it even reaches the point of sale, let alone consumers. The program will include projects that will find ways to reduce losses along the value chains of mango and tomatoes in Sri Lanka and Pakistan; horticultural produce in the Pacific region; and catfish in Vietnam and Laos. Food loss affecting vulnerable urban communities in Zambia and Malawi will also be investigated.

The changing climate in PNG sees irrigation on farms for the first time

Papua New Guinea | Horticulture | Central Queensland University

Sweetpotato farmers in Papua New Guinea (PNG) are benefitting from new irrigation systems that are helping to increase production and improve livelihoods. Many rural communities in highlands of PNG face increasing dry periods and less consistent rainfall due to the changing climate. The worsening conditions frequently impact crop yields, and in extreme cases, have threatened local food security. The new irrigation systems, pioneered by the ACIAR-supported project, focuses on commercial sweetpotato production and marketing in the region and is providing farmers with a more dependable source of water that will bolster production and help shift rural communities from subsistence farming to more commercial and drought-proof production.

Production of disease-free 'clean' planting material for cassava ramps up in the Mekong

South-East Asia | Agribusiness | University of Queensland

An ACIAR project is developing responses for small cassava producers in Cambodia, Laos and Vietnam, who are facing the threat of crop destruction because of cassava mosaic disease. This viral disease spreads through infected planting material. A first response is to provide farmers with disease-free planting material and, through demonstration and direct experience, initiate the demand for clean planting material to motivate private production. The project has designed a rapid multiplication method for cassava cuttings and deployed plastic tunnels in Laos that are now in production. The long-term response to the disease will involve resistant varieties; the first testing of some candidates has started. In the meantime, planting disease-free instead of infected material can provide breathing space to the farmers.

Bounthong Bouahom, Director General of National Agriculture and Forestry Research Institute, Laos at the tissue culture laboratory of the Rice Research Centre. Photo: Khounkham Douangphachone.

Central to the success of the LIFE – Livelihood Improvement through Facilitated Extension – model is bringing together people and capitalising on social networks.

CASE STUDY

Bringing new LIFE to areas of conflict

A new approach to improving livelihoods in farming areas of the Philippines that are subject to conflict has boosted incomes, expanded the range of viable crops and empowered local communities.

Working with relatively poor farmers in the fertile western Mindanao, the ACIAR-supported project developed a model known as LIFE – Livelihood Improvement through Facilitated Extension.

LIFE involves a 15-step approach that starts with the appointment of a facilitator who lives in and is part of the community, and develops networks between farmers, farmer groups, local government units and NGOs to build social capital and cohesion.

'Previous extension processes have come from a position of "Here's a problem; here's a solution; this is what you do,"' explained the project leader, RMIT University Research Fellow Dr Mary Johnson.

'Instead, we supported the development of local farmer groups, who worked with their facilitators to help them achieve what they wanted through their networks.'

The project established successful livelihood development programs in 6 pilot communities and encouraged farmers to try new enterprises. Through LIFE, visits to neighbouring farms can also take place, and this has improved relationships between previously distant Muslim, Christian and Indigenous communities.

Jury Alimonjanid farms at Ampatuan, Maguindanao where, 58 people were killed in 2009 in an attack sparked by political rivalry. He usually grows corn and coconuts but has now added rice, bananas, vegetables and fruits.

'We learned a lot from the LIFE project, especially on the proper use and application of mulching, water impounding and organic fertiliser. This is a big help for us since we get our income for education and household needs from these,' said Mr Alimonjanid.

Helen Anaud from South Cotabato said the LIFE approach had also changed the way her local government office implemented its research programs with farmers.

'Before, we just accepted projects that were downloaded to us through the Department of Agriculture. Now, our farmer partners are involved in the program cycle from planning to monitoring and evaluation, and they become empowered,' said Helen.

The Department of Science and Technology–Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD) has provided 30 million Philippine pesos (A$878,500) over 3 years to expand and evaluate the use of LIFE in 3 other conflict-vulnerable sites.

Residents work in their community garden in the Southern Philippines Province of South Cotabato.

2. Natural resources and climate change

Degraded coral reefs throughout the Philippines and on the Great Barrier Reef are assessed and restored using innovative techniques.

Managing natural resources and producing food more sustainably, adapting to climate variability and mitigating climate change

Degradation of natural resources, climate change and extreme weather events threaten our ability to ensure global food security, eradicate poverty and achieve sustainable development.

The hardest hit are the rural poor, who mostly depend on agriculture, fish or forests for their livelihoods in the context of increasing scarcity and competition for natural resources.

Effectively managing these resources – including land, forests, vegetation, water and energy – requires a coordinated approach with local communities to slow down, stop and ultimately reverse natural resource degradation to secure sustainable agricultural production and protect these unique assets for future generations.

Our work

ACIAR is committed to investing in projects that tackle climate impacts on agriculture and encourage sustainable use and management of natural resources, including rehabilitation of soils, forests, landscapes and waterways.

Across the Indo-Pacific region, we strive to improve livelihoods through sustainable intensification of farming systems, develop innovative transformational adaptation responses for smallholder farmers and build institutional capacity to understand and implement practical emissions reduction activities.

A new research program has been implemented to assess agriculture's contribution to climate change, and identify opportunities to reduce greenhouse gas emissions from the agriculture, fisheries and forestry sectors in our region.

We partner with leading Australian research institutions to invest in programs that:

- support low- and middle-income countries to tackle climate impacts in agriculture, in line with their national plans and strategies
- promote natural resource conservation and rehabilitation through scientific support for the establishment, management and sustainable use of forests, soils and waterways
- address the challenges of efficient, sustainable water use to support agricultural production
- identify and provide realistic options to deliver meaningful emissions reductions in agriculture
- improve access to, and outcomes from, irrigation and sustainable use of groundwater in agriculture
- develop innovative transformational adaptation responses that increase resilience of smallholder farmers
- build linkages between Australia and developing countries to better adapt to changing climates, and to understand, measure and mitigate emissions
- strengthen Australia's own agricultural climate change capabilities through trialling innovative approaches.

Highlights

Scientists develop a soils kit for soil health assessments

South-East Asia | Horticulture | Queensland Department of Agriculture and Fisheries

Scientists from Laos, Indonesia and the Philippines will pilot the use of a new test kit for soil health, which was developed in Australia. The kit, developed by an ACIAR project, enables physical, chemical and biological soil measurements in remote locations, when access to laboratories is difficult. Comprising off-the-shelf products that fit into a compact container, the kit has everything you need for remote testing and analysis. The readily available technology provides quantifiable data on 10 different soil properties (4 physical, 4 chemical and 2 biological). Initial field testing revealed the kit could discriminate between different land uses, poor and high production areas, and where intrusive management practices have been implemented. During development, the kit was used to assess the soil health status of soils in Australia and showed that herbicide control of navua sedge in north Queensland preserved soil diversity better than cultivation.

Aquifers recharge India's groundwater

India | Water | Nalanda University, India

An ACIAR and DFAT-supported project has successfully developed a system to store more groundwater in South Bihar – an agricultural region of India – to help alleviate water scarcity.

The Aquifer Storage and Recovery system puts more water into an aquifer located at a pilot site where there is often not enough water for essential needs during the dry season. The system – which comprises a deep recharge pit connected to a borewell – is low cost, built with locally available materials and allows the aquifer to be recharged in the wet season. South Bihar is one of the most water-challenged regions in India, with rural communities facing increasing amounts of floods and droughts due to the worsening impacts of climate change. With local agricultural production depending heavily on rainfed irrigation, this innovative system can capture monsoonal rains to sustain crops throughout the dry season.

Restoring Australia's Great Barrier Reef

Philippines | Fisheries | Southern Cross University

Techniques previously developed through Southern Cross University to restore degraded coral reefs are now being scaled both across the Philippines and on the Great Barrier Reef. Results from 8 years of ACIAR-funded 'coral IVF' research in the Philippines and at Heron Island, off the central Queensland coast, show it is possible to regenerate coral reefs through harvesting millions of fertilised coral eggs to grow new corals. A new project will investigate suitable governance arrangements in the Philippines for implementation of coral restoration programs at a national scale. It will build on the existing networks and capabilities established through the Philippines' pioneering work to establish marine protected areas. The research is globally significant because more than 60% of the world's coral reefs are under direct threat or have been seriously degraded by human activities and some reefs have been destroyed. The coral reef restoration program is a critical step in protecting Australia's Great Barrier Reef and has the potential to restore reefs around the world including the Great Barrier Reef.

Adaptation plans for water insecurity

Global | Climate Change | International Water Management Institute

Water insecurity is one of the most visible effects of climate change, and in response, people and governments globally are implementing various adaptation plans. But how effective are the majority of these plans in building climate-resilient farming systems that use water efficiently and sustainably? A meta review of case studies of water-related adaptation responses produced striking results. Only 21% of around 1,800 studies actually assessed effectiveness in any way, and only 4% did so with enough rigour to make a causal connection between the adaptation and the benefits reported. The team also attempted to look at enabling conditions that make it more likely that adaptation would be effective. The best of these was participative governance – 34% of cases of 'participative governance' were associated with effective adaptation. So there remains a lack of knowledge about how effective various water adaptation plans and actions are. It will be essential to design plans that include more monitoring and evaluation, and to set them up for success by developing and executing plans in a participatory way with the communities affected.

Greenhouse-grown crops open doors to high-value markets

Fiji, Samoa, Tonga | Horticulture | Central Queensland University

Small- and medium-scale farmers produce the vast majority of high-value crops in Fiji, Samoa and Tonga. But, since the local growing season lasts for only a few months, farmers cannot produce a steady and reliable enough supply to attract the vibrant tourism industry and end up selling their produce in local markets instead. Greenhouses have the potential to close the gap between local supply and demand. A project on protective cropping under the 2009 ACIAR-funded Pacific Agribusiness Research for Development Initiative is helping change this situation. The project is not giving farmers materials to actually build greenhouses. Instead, researchers are conducting key research into the type of protected cropping structures and approaches that work well in the local landscapes and then working with suppliers of inputs (such as fertilisers and irrigation systems) to ensure interested farmers have easy access to these materials.

Researchers using technology to measure groundwater levels in India.

Soil water monitoring supports the needs of smallholder farmers and addresses information deficits at national levels.

CASE STUDY

Chameleon colours spark action on irrigation

An innovative soil moisture sensor that uses colours to cut through language and literacy barriers has proven ground-breaking in rural African communities and has informed wider policy for water management.

The Chameleon Soil Water Sensor was developed by project leader Dr Richard Stirzaker from the CSIRO, and uses an easy to understand system of colours linked to actions: blue for 'Don't water'; green for 'Moist – just right'; and red for 'Dry – needs water'.

'It's as simple as soil water monitoring gets – the sensor is buried in the ground, we slip the connecting wire into the contact on the Chameleon card, and the light will read blue, green or red,' said Dr Stirzaker.

'I've worked with thousands of smallholder farmers across Africa and been amazed at how much water they've saved and how much food they've grown as a result of using the Chameleon.

'Making the right decision about whether to water their crops is a serious business. Not enough water stresses the plant and reduces the potential yield and too much water can wash away valuable nutrients in the soil.'

ACIAR has been funding Dr Stirzaker and the CSIRO since 2012 to work with partner organisations in Africa to improve irrigation efficiency and crop production. The project that investigates water monitoring to learning and to governance is due to finish in June 2023.

It will develop the system from its current function of monitoring water and solutes to a water learning and governance platform that can support the needs of smallholder farmers and address information deficits at national levels, including feedback to donors who invest millions in irrigation infrastructure.

The Chameleon soil moisture sensors are also proving to be a useful tool in monitoring and management of Indonesian peatlands. An ACIAR Small Research Activity aligned with the larger Peatland Fire Management and Restoration project has installed a network of Chameleon sensors (to measure moisture in the soil) surrounding an Eddy Covariance Flux tower (which measures greenhouse gas emissions) in a degraded peatland area in Central Kalimantan.

The project has demonstrated the value and capacity of both the Eddy Covariance system and Chameleon sensors as tools for local communities, provincial and national government agencies, and other stakeholders responsible for peatland restoration and management.

A farmer in her farm plot holding a device she uses to measure water in the soil. Photo: Andrew Mununwa.

3. Human health and nutrition

 A farmer packing ripe tomatoes ready for market in Tanzania.

Enhancing human nutrition and reducing risks to human health

The COVID-19 pandemic has placed unprecedented pressure on our food system. It has never been more important to focus on human health and food production to address factors that limit access to nutritious foods.

Emerging zoonotic diseases threaten human and animal health, economic development and the environment. In addition, a range of plant and animal diseases and plant pests continue to threaten food security. Many countries also face the 'triple burden' of malnutrition: the coexistence of food insecurity, micronutrient deficiency, and obesity and associated diseases such as diabetes and heart disease.

Our work

ACIAR supports partner countries to not only increase agricultural production but also focus on better nutritional outcomes and address risks to human health through diseases linked to livestock, agrichemical use and food safety issues.

We partner with leading Australian research institutions to invest in programs that:

- respond to emerging pest and disease threats in the Indo-Pacific region
- address the linkages between food security, human health and the environment through a One Health approach
- explore social, ecological and systems-based drivers and mechanisms for improved disease control
- examine the entire supply chain to deliver safe and nutritious food that is necessary for human health
- enhance surveillance and diagnoses of zoonotic diseases and antimicrobial resistance to reduce their impact
- research the contributions of food systems to human nutrition, health and wellbeing, and making food system policies nutrition-sensitive
- enhance biosecurity and quality control in farm production
- minimise risks to human health from diseases linked to livestock, agrichemical use and food safety issues.

Highlights

Super seaweed improves fish immunity

Cambodia and Indonesia | Fisheries | University of the Sunshine Coast

New ACIAR-supported fisheries research has uncovered potentially ground-breaking alternatives to veterinary drugs to combat aquaculture diseases. Aquaculture produces more than 50% of the seafood consumed globally, but disease outbreaks pose persistent threats to its further development and costs the global industry more than A$8 billion every year. Piloted by the University of the Sunshine Coast, the research discovered several seaweed species could boost the immunity of farmed fish – as high as 4 times in some cases – when added to fish diets as a powdered additive. The new research could also mean a reduced dependency on veterinary drugs that can sometimes be detrimental to the environment, animals and consumers.

Applying One Health methods to improve cocoa production in Bougainville

Papua New Guinea | Horticulture | University of Sydney

The Bougainville cocoa project has developed a successful new method to understanding farmer livelihoods. The application of a One Health approach explores the importance of human health as a factor to consider in improving farmer livelihoods. The project links health professionals in Australia and Bougainville to deliver holistic interdisciplinary interventions that target nutrition and health at the same time as improving cocoa productivity. When extension staff visit villages, they are joined by a health officer to provide advice on all aspects of health and sanitation. Extension staff have also been receiving training to support cocoa growers to diversify their gardens to increase the production of nutritious vegetables for home consumption with excess produce available for sale.

Soil science improves Pacific diets

Pacific | Soil and Land Management | Pacific Community

New ACIAR-funded research, partnering with the Pacific Community, the University of Tasmania and the University of Adelaide, has found that a return to growing and eating more traditional foods could help improve nutrition and reduce non-communicable diseases (NCDs) in the Pacific region. The growing influence of Western culture has seen many Pacific countries replace traditional diets with energy-dense and nutritionally poor food, resulting in the region having the highest rate of NCDs in the world. Since 2014, the project has been funding research in Kiribati and Tuvalu examining ways to improve people's nutritional intake by enhancing soil health and increasing agricultural productivity by growing staples and vegetables that are resilient to harsh atoll conditions. The project developed compost recipes, using biomass from plant species widely available in the atoll nations, that match the nutrient requirements of vegetables and staple crops. The project team grew planting material in nurseries for distribution to farmers along with the compost recipes. They provided training to farmers on production of the composts and crop management and taught local communities about the nutritional benefits and use of numerous plants growing on the atolls.

Improving animal health diagnostic capacity

Papua New Guinea | Livestock Systems | CSIRO

The response to African Swine Fever (ASF) in Papua New Guinea (PNG) was given a timely boost, with ACIAR support for training and new equipment. The support is assisting the National Agriculture Quarantine and Inspection Authority (NAQIA) to conduct rapid and accurate detection of ASF outbreaks using diagnostic tests previously unavailable in the country. Since 2018, ASF has been spreading throughout Asia and the Pacific, reaching the highlands of PNG in March 2020. With a mortality rate close to 100% and no available vaccine, the disease is devastating pig populations and severely impacting the livelihoods of smallholder pig farmers. The livestock research partnership in PNG with NAQIA is contributing to improved in-country capacity to detect and respond to ASF and other animal diseases.

Commercial citrus crops welcomed by Tongan shoppers

Tonga | Horticulture | University of the Sunshine Coast

Four years after elite Australian rootstock was planted on Tongatapu, the first Afourer mandarins from an irrigated orchard of nearly 200 mandarin, navel orange, lemon and Tahitian lime trees have been eagerly welcomed by local shoppers. The harvest is part of an ACIAR project partnering with private sector and community groups in Tonga to grow high-quality fruit in the Pacific, to help combat the high incidence of non-communicable diseases such as diabetes and cardiovascular disease. With Nishi Trading as a commercial partner and MORDI Tonga providing the community interface, the project is showing local people how to turn over valuable land to plant the trees and learn how to cultivate, prune and manage them. Government staff are being trained in orchard maintenance and tree propagation skills. Packing, processing and cool room facilities have also been established as part of the overall development of the industry, with the potential to make dried or frozen product as well as juice citrus and watermelons.

Food security in the Pacific region

Pacific | Fisheries | University of Wollongong

Although it is premature to draw conclusions about the impacts of COVID-19 on the Pacific food system and its governing regime, it is certain to cause profound economic and social shocks to national food and health systems already struggling to cope. Further, although crop production has doubled in the last 50 years, it has not kept pace with population growth. This deficit is increasingly filled by imported foods, particularly staples like meat and sugar. A network of Australian and regional partners is working to fill significant gaps in national food system quantification. The project, led by Professor Neil Andrew from the Australian National Centre for Ocean Resources and Security at the University of Wollongong, is a mix of strategic analysis at national scales and place-based research on local food environments. The project has developed an innovative typology of local food environments that will be integrated into future national surveys to better understand food acquisition. In collaboration with the Food and Agriculture Organization of the United Nations, comprehensive analyses of good consumption in 4 Pacific countries have revealed worrisome levels of malnutrition. These analyses, along with the first adequately curated database on international food trade, provide the basis of a wide range of integrative syntheses of the region's food systems and public health outcomes.

PhD candidate Valentin Thépot investigated the potential of seaweeds in the diet of farmed fish. Photo: USC

Avian flu spreading to humans has sparked a sense of urgency in improving collaboration between the human and animal health sectors.

CASE STUDY

Bridging the animal-human health divide

A One Health research project has exposed some critical challenges for the Mekong countries of Cambodia, Laos and Vietnam in managing the risks to human health from animals and animal-sourced foods.

An outbreak of African Swine Fever (ASF) in the region and previous outbreaks of avian influenzas such as H5N1 that have spread to human populations have sparked a sense of urgency in improving collaboration between the human and animal health sectors.

The Nossal Institute for Global Health supported by ACIAR and the Indo-Pacific Centre for Health Security is leading the One Health project in the 3 countries, reviewing the role and policies of both sectors in responding to outbreaks, disease notification and early interventions to limit disease transmission.

Research leader Professor Barbara McPake said there were 2 main findings: an imbalance of resources between the animal health system and the human health system, and the use of different incentives in each system to promote the greater good.

'For example, if you call a meeting, the human health people have a vast array of policy advisors to send but the animal health people may have only one person available, if any, so it's not a level playing field on which to collaborate,' she said.

'The human health sector has also built a system of incentives to encourage people to do things with the biggest public health impact but there's none of that in the animal health system.

'I think it's assumed that farmers will do it themselves, but this perspective doesn't recognise that it is in all of our interests to avoid disease spread in animals.'

Professor McPake's project started prior to the emergence of COVID-19 but she believes the novel coronavirus pandemic will fuel public interest in the wellbeing of farm animals in Cambodia, Laos and Vietnam.

ACIAR Research Program Manager for Livestock Systems Dr Anna Okello said Australia's investment in One Health research demonstrated how important it was in helping to safeguard domestic biosecurity.

ACIAR co-funds the $10 million Research for One Health Systems Strengthening Program, a group of research projects addressing zoonoses, antimicrobial resistance and systems strengthening within the Asia Pacific.

'The program includes scientific, technical, social and economic research that will boost the regional response to emerging disease threats. COVID-19 has shown us that diseases don't respect national boundaries,' Dr Okello said.

A bird is assessed by animal health professionals to monitor African Swine Fever in the region.

4. Gender equity

Bougainville farmers Martin and Celestine Masen have undergone training to improve livelihoods for farming families and address gender inequalities.

Improving gender equity and empowerment of women and girls

Women and men play a central role in the farming, food and health, and natural resource management systems of low- and medium-income countries. However, women's contributions are often undervalued or unrecognised – and they are often disproportionately affected by poverty.

Gender equality is crucial to alleviating poverty in rural communities. In developing countries, women do much of the manual labour on farms, as well as domestic duties. ACIAR recognises the untapped potential for improved production, income and family nutrition that occurs when women play a more visible and equal role in agricultural decision-making.

If women had equal access to resources, their farms would be more productive and they would be able to feed more hungry people. When women earn an income, they invest in their families, who then become healthier and more educated, which in turn leads to greater prosperity for their communities.

Our work

ACIAR projects change women's lives by helping them to realise their potential and make their farms more sustainable, productive and profitable, to the benefit of all. We are working to redress gender imbalance by supporting projects that are designed to be equitable, inclusive and empowering.

We work with all our project partners to:

- mainstream gender equity and women's empowerment into the research portfolio, incorporating principles of gender equity in project design
- ensure research is undertaken in a way that advances gender equity and empowers women
- create more equal systems of access and recognition of women's agency, decision-making and participation
- deliver outreach and capacity-building activities to ensure equitable access to opportunities for women
- identify opportunities for gender equity impact and transformation for women's empowerment
- boost women's influence in setting the agendas for research.

Highlights

PNG rural women boost their business skills

Papua New Guinea | Horticulture | Curtin University of Technology

The large-scale production and trading of crops like betel nut, pineapples and European vegetables, as well as the development of money lending and the marketing of phone credits are attracting new types of entrepreneurial women in Papua New Guinea (PNG). While rural women make up a large proportion of labour and fill valuable social and community roles, they usually face significant barriers to increasing their cash incomes. Through identifying the characteristics of successful entrepreneurial women and providing better access to training and information, this project aims to transition smallholder women into agribusiness and the formal economy, and thereby increase their income, status, and livelihood security. Improved family financial practices instigated by women will also strengthen households' resilience to shocks. The impact of the research is being scaled up through the provision of findings, reports and policy briefs to the Pacific Gender Research Partnership, funded by the World Bank and DFAT.

Stronger links improve Pakistan vegetable supply chains

Pakistan | Horticulture | CABI Pakistan

Pakistan's rural communities grow up to 9 million tonnes of vegetables on around 630,000ha each year, with the Punjab and Sindh regions accounting for 70% and 13% of production respectively. But the rural poor in these regions, especially women and young people, are missing out through a lack of experience in production technologies, post-harvest handling and protocols, marketing options and business knowledge. By strengthening the value chains of onions, potatoes, tomatoes and chillies, the project aims to improve the incomes of farming families, as well as the availability of safe, fresh vegetables. Women and youth groups will be enabled to source and finance inputs, adopt improved crop management and post-harvest practices, and engage in value-adding opportunities. This work is part of the Sustainable Vegetable Value Chain Project, which has the goal of seeing rural people living in the Punjab and Sindh benefit from improvements in strategically selected agricultural value chains.

Dr Kishore from the University of the Sunshine Coast providing guidance on the oyster shell cleaning process.

Seaweed set to boost incomes for women in the Pacific

Pacific | Fisheries | University of Sunshine Coast

Seaweed farming and wild-harvesting communities in the Pacific region are now better equipped to explore new local and export markets for their products. A 5-year research project has identified new ways to farm and use seaweed in Fiji, Kiribati and Samoa, leading to more jobs – particularly for women as the main seaweed harvesters – and better nutrition for Pacific islanders. Seaweed is used for food and industrial products throughout the Pacific region, but its potential is yet to be reached. Seaweed's health benefits have long been understood, however, technical, cultural and economic challenges have held some communities back from modernising and expanding the seaweed industry. The recently completed project helped to make the local industries more productive, lucrative and resilient. Moreover, the project supported diversification of seaweed industries, with a particular focus on traditional seaweeds to increase the involvement of women who are leaders across the entire wild harvest supply chains in each country.

Unlocking Pacific pearl potential

Fiji, Tonga, Papua New Guinea | Fisheries | University of the Sunshine Coast

Cultured half-pearls, called mabé pearls, are the Pacific's most promising new aquaculture commodity. ACIAR-supported researchers are working with communities and women's groups to harness this ocean resource to empower women and improve coastal livelihoods. Through ACIAR, coastal communities in Fiji and Tonga are farming pearl oysters at sea and, once they are adults, 'seed' the oyster with the pearl nucleus, replacing them back in the sea for a further 12 months to allow a pearl to form. Once harvested they are either sold to purpose-built training centres, where women have been trained in jewellery production, or to women in the farming communities who make their own handcrafts using hand-held tools that do not require electricity. Increasingly traditional designs are incorporated into the carving on the mother of pearl surrounding the pearls. In PNG wild harvested shells are used to make modern jewellery, again incorporating traditional colours and designs. The jewellery is sold to retail outlets, cruise ship tourists or local markets fetching from A$20-90 depending on pearl quality and the craftmanship of the carving. Ravita village women in Fiji have had two successful harvests with each harvest bringing about A$6,000 to the community. The pearl farms have contributed towards household funds and future village development. With the region prone to natural disasters, the women are building an evacuation centre from the money they have collected from pearl farming.

An ACIAR-supported project has supported women in Fiji to establish crops that will generate income for their community and safeguard their environment.

CASE STUDY

Rehabilitating a water catchment and challenging gender norms

A long-running ACIAR-supported project in Fiji has empowered local women to improve community livelihoods and protect their environment through agroforestry.

Increasing soil erosion, flooding and drought-related events were on the rise due to unsustainable agriculture and resource exploitation within the Nadroumai catchment near Sigatoka in Fiji, and the Nadroumai Women's Club (NWC) was keen to learn about agroforestry techniques to mitigate the environmental effects.

The club was identified as a good fit for a project supporting increased resilience, productivity, climate mitigation and livelihood opportunities from agroforestry in Papua New Guinea, Solomon Islands, Vanuatu and Fiji. The project is a partnership with Griffith University and the Pacific Community's (SPC) Land and Resources Division and began in 2015.

It typically takes 5 to 10 years to see returns from planting trees, but the project helped NWC set up a planting system where crops were planted alongside trees to harvest the crops faster and start earning income.

It led to an expansion of the village's planted agroforestry acreage from one acre 4 years ago to 10 acres today. The NWC tree nursery produced seedlings that rehabilitated the Nadroumai water catchment.

The NWC Treasurer, Mrs Amele Duguivalu, said when the project started, the club consisted of 10 members.

As the village nursery progressed and the community witnessed its success, more women joined the initiative. The club doubled in size, and the seedlings' profits increased from A$650 in 2018 to around A$3000 in 2020.

'Apart from the sales of our seedlings, the women have also taken up smallholder farming thanks to this project. Every week, we harvest fruits and vegetables, and we take them to nearby markets, and each member earns about A$80-200. This has truly changed our lives', Mrs Duguivalu said.

Not only have the women turned to their traditional ways of harnessing the natural resources provided to them by the land, but they are also eating more healthily and contributing towards their families and village projects.

'I am using my earnings for family shopping and house upkeep. The community nursery has its separate bank account, and with the profits we have bought folding tables and chairs for the village hall. Last year the women were also able to go on a retreat around the island. For many of us, that was the first holiday we ever had,' she added.

Mrs Suliana Delana uses coconut husks to add to a compost mixture. Photo: Sunayna Nandini.

5. Inclusive value chains

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

An ACIAR project aims to understand the drivers of rural transformation in regions such as West Bengal, India.

Fostering more inclusive agrifood and forestry market chains, engaging the private sector where possible

Value chains have the power to transform livelihoods of some of the world's poorest and most vulnerable people. Millions in the developing world work as smallholders – producers, labourers, traders, processors, retailers or consumers in agricultural value chains – yet they are the most disadvantaged in market systems.

Unlocking the potential for people to participate equitably in markets and to benefit from the opportunities provided by business is a proven way to create employment, improve business outcomes for smallholders and communities and increase economic security in developing countries.

ACIAR creates partnerships to increase the efficiency of supply chains, improve food safety and reduce food losses, and promote value chains that are profitable for everyone involved. We use best practices in agriculture production, supply-chain management and market-based solutions to build value through supply chains.

Our work

We work with business to create and strengthen complex agrifood value chains – from the farmers who produce goods to the markets where they are sold and the customers who buy them.

We work with a range of partners and engage with the private sector to:

- connect smallholder farmers to business opportunities, increase access to markets and make value chains more inclusive and effective
- build communications and management skills of people along the value chain, equipping them with appropriate economic tools to build business partnerships
- research all points along value chains, including inputs, production and harvest, and post-harvest activities of packaging, transport and storage, processing, marketing and sales
- address biosecurity, farm production management, quality control and compliance with market and government regulations
- identify opportunities for smallholders to adopt new technologies, making agriculture competitive and sustainable
- understand factors that influence market development, regulations, policies and institutions that influence production, investment and infrastructure.

Highlights

Indonesian farmers cash in on higher quality milk

Indonesia | Agribusiness | University of Adelaide

Smallholder Indonesian dairy farmers in West Java are being paid more when they deliver 'better' milk as part of an ACIAR-supported trial to boost the quality of milk production in the country. Low milk quality is a problem for Indonesia's dairy sector, with high bacterial counts impacting product shelf-life and restricting the number of products it can be used for. The trial was conducted in the village of Cisarua in West Java with the local milk processor Cimory and the village level cooperative KUD Giri Tani and its farmer members. Farmers typically make about 2,150 Indonesian rupiah (19 Australian cents) profit per litre of milk, but under the trial, they can receive up to 1,000 rupiah (A10c) on top of this for high-quality milk. The trial follows training for local dairy farmers that introduced them to practices that reduce bacterial counts.

Business steps up to improve agricultural research

Vietnam | Agribusiness | University of Sydney

Prominent Vietnamese and Australian business, research and policy leaders have joined forces to form the inaugural ACIAR Agribusiness Reference Group. The initiative will assist ACIAR-funded researchers in Vietnam to engage with private agribusiness firms by providing greater insight into private sector needs and issues, as well as those of smallholder farmers. The reference group approach is a first for ACIAR, with future efforts looking to replicate the model throughout East and South-East Asia.

Unlocking dairy potential in the Philippines

Philippines | Agribusiness | University of Adelaide

Around 99% of milk products in the Philippines are imported, presenting a significant opportunity for industry growth and the Philippine Government has prioritised the development of the dairy sector. ACIAR, the Department of Science and Technology - Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (DOST-PCAARRD), the University of Adelaide's Centre for Global Food and Resources, and the Philippine Foodlink Advocacy Cooperative are collaborating on a project that analyses markets, value chains, opportunities and challenges for the sector. The initiative focuses on smallholder dairy farmers, who run about 80% of the Philippines' dairy businesses. It mobilises partnerships, ideas, technologies and innovations to help jump start improvements in the Philippine dairy industry to contribute to food security and the country's economic growth.

Supporting Lao farmers to seize goat opportunities

Laos | Livestock | University of New England

Demand for Lao goat meat has skyrocketed in recent years and an ACIAR-supported project is helping smallholder farmers benefit from the trade. In recent months, the project team has completed the benchmarking survey, field-tested a prototype GPS tracking device and strengthened ties with local farmers. The information conducted through interviews with farmers across 7 villages will help identify opportunities to support smallholder goat farmers develop their enterprises, increase production and access markets.

Advancing rural transformation

Bangladesh, China, Indonesia, Pakistan | Agribusiness | Australian National University

Understanding how rural transformation can reduce poverty and improve people's lives is the focus of new research commissioned by ACIAR. Led by the Crawford School of Public Policy at the Australian National University, the project will look to identify the ingredients of successful rural transformation in regional communities across Asia. The project will conduct a cross-country comparison in 4 Asian economies to share insights into successful rural transformation and deliver policy recommendations to different levels of government.

Securing farm-to-plate safety

Myanmar, Vietnam, Philippines | Horticulture | Applied Horticulture Research

Knowledge and awareness of the benefits and practicalities of safe fruit and vegetable production continues to spread across Myanmar, Vietnam and the Philippines as ACIAR seeks to strengthen value chains through the implementation of Good Agricultural Practice (GAP) programs for farmers. The GAP projects have developed links between farmers and retailers at the same time as providing education and support for safe work practices, growing quality produce and ensuring environmental sustainability. Identifying markets that will pay a premium price for compliance with food safety systems is a priority of the Philippine GAP project. A scaled GAP approach has been developed by a proponent of Australia's on-farm assurance program, Freshcare, to teach farmers practical skills beginning with the 80:20 rule – that they'll get 80% benefit from 20% effort on things like basic hygiene and using the right pesticides.

Countries like Bangladesh – where the average family farm is 0.3 hectares – require smaller solutions to achieve zero-till conservation agriculture.

CASE STUDY

Micro mechanisation rolled out

It may be small but the VMP (versatile multi-crop planter) – a zero-till planter that can be adapted for different crops – is improving soils and reducing fuel, labour, seed and fertiliser costs for a group of early-adopter farmers in Bangladesh.

The planter, designed for use with a two-wheeled tractor, is being commercially made and marketed within Bangladesh with support from funding delivered through the Australian Department of Foreign Affairs and Trade's (DFAT) Sustainable Development Investment Portfolio (SDIP) with ACIAR.

Through SDIP-funded partnerships, farmers, researchers, extension staff and government officers have been introduced to conservation agriculture. It is an innovative, more sustainable approach to farming that has been practised in developed countries for decades.

While broadacre cropping countries have developed huge zero-till conservation agriculture machines for use over large areas, countries like Bangladesh – where the average family farm is 0.3 hectares – require smaller solutions.

The pioneering VMP – initially developed through an earlier ACIAR project to open up a market for small-scale conservation agriculture mechanisation – is now being more widely promoted through a SDIP-funded research-and-private-sector partnership.

The partnership includes a Bangladesh equipment manufacturer and a bank, as well as extension staff and local service providers – entrepreneurs who purchase agricultural equipment so they can contract their services to farmers in their area.

Intensive rice-based cropping accounts for 80% of Bangladesh's total crop area, and farmers generally do 2 to 6 tills of the soil and 'puddling' before they transplant rice seedlings.

The use of the VMP opens the door to non-puddling technology, allows rice seeds to be sown directly, a range of crops to be planted and applies fertiliser with the seed. Its effectiveness as a 'single pass' planter can bring about a 50–85% saving on fuel costs.

Local farm-equipment manufacturer Mr Mizanul Hoque has been making the VMP commercially since 2016, partnering with the ACIAR researchers to promote it through demonstrations, field days, after-sales service and training, and incentives. As of October 2020, Mr Hoque had sold 211 units.

Local service provider Mr Khorshed Alam from Bangladesh's Panchaghar district, purchased a VMP in 2018. He rents it out to other farmers and uses it on his own farm, where it has reduced labour, fuel and seed costs and increased crop yield and profit. He says the additional rental income has helped improve his livelihood.

Murdoch University's Dr Enamul Haque, who is based in Bangladesh, is a member of the VMP development team.

Smaller farm equipment solutions than those adopted in broadacre cropping are required for countries like Bangladesh.

6. Capacity building

John Allwright Fellowship recipient and SPC Plant Health Coordinator Mani Mua examining crops in Fiji. Photo: Sunayna Nandini.

17 PARTNERSHIPS FOR THE GOALS

Building scientific and policy capability within our partner countries

Innovation in the agriculture sector helps reduce poverty, increase food security and underpin broad-based economic growth. Building the capacity of agricultural researchers, their networks and institutions unlocks this innovation potential and supports countries to deploy relevant, effective agricultural practices and policies.

Strengthening the capacity of individuals and organisations in developing countries is central to empowering communities to develop by implementing and sustaining their own solutions. It is not a one-time effort for immediate and short-term results but a continuous improvement strategy to create sustainable and effective improvement over time.

Our work

Capacity building is at the core of everything we do. Our goal is to ensure that the people we work with have the skills, resources and knowledge to sustain new initiatives, systems and approaches, both now and in the future, to support lasting change. We deliver a range of innovative capacity-building approaches focused on multiple levels for effective international agricultural research-for-development. Our approach includes both formal and project-based capacity building.

We work with our partners to:

- facilitate formal programs in scientific research, leadership, management, policy and governance
- deliver tailored capacity-building approaches to on-the-job training, leadership, mentoring, two-way transfers of ideas and technologies, and support to undertake research
- foster a strong alumni program, working closely with past fellows to support ongoing collaborative capacity building
- ensure all capacity-building approaches are gender-aware and work towards gender equity
- tailor approaches at individual, organisational and institutional levels, ensuring our approaches are integrated with our ongoing technical work.

Formal capacity-building programs

- Meryl Williams Fellowship: enhancing the skills and career prospects for women in agricultural science
- John Allwright Fellowship Program: providing formal postgraduate training
- John Dillon Fellowship Program: providing leadership and management training for career development
- Pacific Scholarship Program: supporting emerging agricultural scientists through scholarships at Fiji National University and the University of the South Pacific
- The Crawford Fund: delivering training and links with Australian-based networks, masterclasses and an annual conference at Parliament House
- Researchers in Agriculture for International Development network: supporting early-career Australian researchers to engage with agricultural research-for-development
- ACIAR Alumni program: supporting a diverse and dynamic network of agricultural researchers throughout the Indo-Pacific.

Highlights

Alumni boost pandemic-resilient agriculture

Global | Capacity Building | University of New England

ACIAR supported 38 alumni across the year to research projects that build resilience and respond to the challenges the pandemic has presented to agriculture systems in ACIAR partner countries. Each alumni received up to A$20,000 for their projects as part of the ACIAR Alumni Research Support Facility (ARSF). A second round has identified an additional 31 projects to receive funding and has expanded the ARSF beyond strictly research projects to also include agricultural outreach and policy where they seek to build capacity and develop resilience in partner countries.

Postgraduate fellowships support biosecurity

Global | Capacity Building

Ranging from a plant health champion in Fiji to a Tanzanian PhD candidate researching the interface of chicken and human health, recipients of the John Allwright Fellowship (JAF) are supporting biosecurity efforts to attaining optimal health for people, plants and animals. A capacity-building initiative of ACIAR, that is supported by the Australian Department of Foreign Affairs and Trade, JAFs provide scientists from ACIAR partner countries involved in ACIAR research projects with the opportunity to obtain a postgraduate qualification from an Australian institution. Fijian plant health champion Mr Mani Mua was selected to receive a JAF in recognition of his work responding to emerging horticultural pests and diseases in the Pacific, along with University of Sydney PhD candidate Mr Elpidius Rukambile, whose research has been improving human health by examining chicken health and husbandry in Tanzania.

Mastering value chains in the Philippines

Philippines | Agribusiness | CSIRO

More than 30 research and agribusiness specialists from the Philippines have completed a year-long agribusiness masterclass, committing to use their new skills and knowledge to help respond to the challenges caused by the COVID-19 pandemic. During the last 12 months, masterclass participants worked on enhancing their skills and knowledge on agribusiness challenges and value chains, developing projects to help smallholder farmers take a consumer-focused approach in producing food to further boost incomes and livelihoods.

Run by Australia's CSIRO and the Philippines Foodlink Advocacy Cooperative, the course was co-funded by ACIAR and the Department of Science and Technology - Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development.

Evaluating the impact of the ACIAR capacity building program

Global | Capacity Building

A 10-year tracer study of the John Allwright Fellowship Program (JAF) has revealed impressive results. The survey covered 378 alumni over the period 2010–2019, including 108 women and 270 men. Up to 10 years after completing their studies in Australia, a significant majority (85%) of alumni remain active agricultural researchers. Coupled with that, a remarkable 96% of alumni identified that the qualification they obtained through their JAF had enabled them to increase their research output. The majority also felt their JAF helped them get promoted, directly contributing to their personal career development.

Second cohort of Meryl Williams Fellows begins

Philippines, Mongolia, Myanmar, Nepal, Samoa, Vanuatu, Solomon Islands, Timor-Leste and Tonga | Capacity Building | University of New England

The second cohort of the Meryl Williams Fellows began on 1 February 2021 with women from the Philippines, Mongolia, Myanmar, Nepal, Samoa, Vanuatu, Solomons, Timor-Leste and Tonga. Due to restrictions on international travel, the Fellowship is being delivered in regular 6-weekly Zoom sessions. The Meryl Williams Fellowship, which targets women in research leadership, was launched in February 2020 with an inaugural cohort of 20 Fellows from Fiji, Indonesia, Laos, Papua New Guinea and Vietnam. The Meryl Williams Fellowship is a key initiative in the ACIAR Gender Policy and Strategy, complementing our leadership in boosting gender research support across CGIAR. It aims to help more women achieve and succeed in positions of leadership in international agricultural research by strengthening their leadership skills, confidence and networks.

John Allwright Fellowship Program alumni Cahya Kurnia Fusianto, holding fish as part of his data collection in aquaculture biosecurity in Bali, Indonesia.

‘I consider myself lucky to have brilliant mentorship through the MWF. They have been able to support and inspire me to continue my research remotely and innovatively.’

Ms Agnes Mone Sumareke

CASE STUDY

Forestry scientist leads PNG to new opportunities

Papua New Guinea forestry specialist Agnes 'Aggie' Mone Sumareke credits her father with giving her the drive and self-belief to study in Australia, Japan and the Netherlands before being selected as a Meryl Williams Fellow by ACIAR.

'Ours is a very patrilineal society that sees men as leaders, not women. My dad used to tell me I had to think and work like a man, and to believe I could do anything I wanted to. He encouraged me to go to university at a time when it was very unusual for girls in my area,' Ms Sumareke said.

The Meryl Williams Fellowship supports female agricultural researchers across the Indo-Pacific to improve their leadership and management skills. Before taking it up in Australia, Ms Sumareke had been researching the potential for new technologies to improve natural resource management, as a forestry and remote sensing specialist with the PNG Forest Research Institute in Lae.

'The Fellowship has been a wonderful boost to my confidence and career development. I have gained skills, know-how and networks. It has taught me how to be a leader at any level, that you can make a difference wherever you are.'

After returning to PNG, Ms Sumareke began research using GIS and remote sensing techniques to assess, model and map the distribution and abundance of the indigenous Galip nut trees. The protein-rich nut with a flavour similar to an almond has the potential to become a significant agroforestry commodity across the Pacific.

Ms Sumareke successfully applied for a grant through ACIAR's Alumni Research Support Facility (ARSF) to support her work during the COVID-19 pandemic. The results and the information she has produced support vital ACIAR and International Food Industry (IFAD) efforts to commercialise Galip and build resilience in local economies, as well as planning for future land use.

In July 2021, IFAD under the Market for Village Farmers (MVF) project announced it would provide a US$136,000 grant to allow Ms Sumareke to continue the work. Ms Sumareke will be working in collaboration with MVF to conduct Galip Resource Survey in PNG, bringing together the National Agricultural Research Institute (NARI), Forest Research Institute and the Fresh Produce Development Agency in a major capacity-building effort.

Ms Sumareke is excited to be coordinating a project team of scientific and research officers, technical assistants and botanists for the first time.

'This is just the beginning. There is potential to domesticate the trees where they are abundant and to supply new export markets, but also to rehabilitate grasslands so we provide income for people and look after the environment. I also want to collect Galip seeds and do trials to improve the varieties grown.'

Meryl Williams Fellow Ms Sumareke researching the potential for new technologies to improve natural resource management.

Our global partnerships

ACIAR works with international partners to foster and implement global research collaborations that promote more productive and sustainable agricultural systems for the benefit of developing countries and Australia.

By leveraging the strengths of the organisations involved, ACIAR can participate in ambitious cross-border research that it could not achieve alone. These partnerships enable the maintenance of extremely valuable physical and intellectual global public goods.

During 2020–21 ACIAR worked to strengthen global collaborations by serving the international research community in 3 key ways:

- as an engaged investor
- as a strategic research facilitator
- as a broker of Australian science

Multilateral partnerships

The largest of our multilateral partnerships is with CGIAR (formerly the Consultative Group on International Agricultural Research), which is the world's largest agricultural research network. Australia has invested in CGIAR since it was established in 1971 and is an active participant in the network of research centres dedicated to reducing rural poverty, increasing food and nutrition security for human health and improve natural resource systems and ecosystem services.

During 2020–21 CGIAR moved towards a unified and integrated 'One CGIAR', better equipping the network to swiftly respond to new challenges. ACIAR actively contributed to the reform process which now sees CGIAR well placed to deliver against both the UN Sustainable Development Goals and the Paris Agreement, as well as attract new funder contributions.

Our support also funded specific research projects delivered by individual centres in the CGIAR network. Created to put equality at the forefront of global agricultural research for development activities, the CGIAR Gender Platform was one such initiative supported by ACIAR.

Another was the Agricultural Science and Technology Indicators (ASTI) Indo-Pacific Program, working with national and regional partners across South-East Asia and the Pacific to survey and analyse data on the funding, human resource capacity and outputs of agriculture research in the region.

In addition to the CGIAR partnership, ACIAR has formal multilateral partnerships with international agriculture research centres and networks, and in 2020–21, supported global research collaborations with:

- The Pacific Community (SPC), focusing on enhancing capacity in coastal fisheries development and management.
- Asia-Pacific Association of Agriculture Research Institutes (APAARI), promoting and coordinating national agricultural research institutes in the Asia–Pacific region.
- World Vegetable Centre (WorldVeg), supporting vegetable breeding and capacity building in Asia and sub-Saharan Africa.
- Centre for Agricultural Biosciences International (CABI), providing information and applying scientific expertise to solve problems in agriculture and the environment.
- The Global Research Alliance on Agricultural Greenhouse Gases (GRA), a research alliance of more than 65 countries collaborating on reducing greenhouse gas emissions.

Women sowing maize in Mozambique.

Co-investments

Co-investment alliances and partnerships are an important component of the ACIAR research program. Building on our reputation as a valued and trusted science partner, ACIAR works on a number of programs where financial support, design and management of programs are shared with another Australian Government agency, an overseas counterpart to ACIAR or private foundations and investors.

Our most significant co-investment is with the Canadian International Development Research Centre (IDRC). ACIAR was originally modelled on the IDRC by Sir John Crawford in his 1981 recommendation to then Prime Minister Malcolm Fraser. IDRC has a non-binding agreement with ACIAR to build collaborations on a range of research initiatives of mutual interest until 2027 and discussions are underway regarding new investment opportunities. Our current co-investment is a 50:50 partnership with Cultivate Africa's Future program and the more exploratory Food Futures program.

ACIAR also extended its strategic partnership with the Crawford Fund and the Syngenta Foundation for Sustainable Agriculture (SFSA) until December 2027. The partners' Alliance for Agricultural Research and Development for Food Security supports research and capacity-building in developing countries.

Since its creation in May 2014, the Alliance has capitalised on the partners' complementary strengths. A particularly successful program has been 'Demand-Led Breeding', which involves collaboration with leading African institutions to enable continuing development for professional breeders in national agriculture research systems and universities. State-of-the-art education modules and materials present the best public and private sector practices for breeding new crop varieties. By focusing on meeting smallholders' needs, Demand-Led Breeding aims to increase their demand for new varieties and boost local production.

Australia's funding, through ACIAR, to CGIAR in 2020–21

Focus	Amount (A$ million)
Overarching	6.2
Fisheries	1.2
Forestry	1.25
Livestock	1.2
Rice	0.5
Roots, tubers and bananas	1.4
Wheat	0.8
Grains, legumes, and dryland cereals	0.8
Agriculture for nutrition and health	1.1
Climate change, agriculture and food security	1.3
Policy, institutes and markets	0.9*
Water, land and ecosystems	1.25
Gender	0.9
TOTAL	**18.8**

*PIM total includes a contribution of 0.3 for Agricultural Science and Technology Indicators (ASTI) in the Indo-Pacific.

Highlights

ACIAR leads Dialogue events in lead up to UN Food Systems Summit

Global

As part of Australia's formal contributions to the United Nations Food Systems Summit, ACIAR led several Dialogue events to share Australian food systems innovations and create pathways to scale. On 25 May 2021, ACIAR convened an Australian Member-state Dialogue together with the Australian Government Department of Foreign Affairs and Trade. This Dialogue about 'Multi-stakeholder Partnerships for Scaling Innovation' invited diverse stakeholders to come together for discussion about best-practice partnership pathways in research and innovation. On 3 June 2021, ACIAR and Canada's IRDC co-convened a Dialogue about Food Loss Research as part of the launch of the Food Loss Program. We invited key stakeholders and research leaders from around the world to discuss the global problem of food loss and advance our global understanding of the relevant issues in low- and lower-middle income countries.

ACIAR's partnership with IDRC on CultiAF has supported entrepreneur Talash Huijbers to rear crickets and black soldier fly as a reliable, sustainable, safe and cost-effective source of protein for small scale livestock farming feeds.

ACIAR hosts the Australian Biosecurity Symposium

Australia

Seeing opportunities to improve Australia's biosecurity border, ACIAR coordinated a focus symposium at the annual conference of Australasian Agricultural & Resource Economics Society on 8 February 2021. The symposium in Canberra was titled 'Effective regional biosecurity for a changing world'. It emphasised the inter-connections between Australia's pre-border, border and post-border biosecurity initiatives. This was achieved through an interactive platform for Australian Government and industry representatives to identify future opportunities and priorities for a stronger regional approach to plant and animal biosecurity, with benefits to both Australia and our partners.

Long-term approach to One Health gains international acknowledgement

Global

The *OECD Development Co-operation Report 2020: Learning from Crises, Building Resilience*, featured a case study on the lessons learned at ACIAR from a decade of investment in One Health. The report is OECD's annual flagship report on international development co-operation, and the invitation to ACIAR to contribute this year demonstrates the international recognition that the work of ACIAR is gaining in our region. The report was launched on 8 February 2021 by OECD Secretary-General Ángel Gurría and WHO Director-General Dr Tedros Adhanom Ghebreyesus.

ACIAR recognises the untapped potential for improved production, income and family nutrition that occurs when women play a more visible and equal role in agricultural decision-making.

NutriFish addresses the nutritional needs of people who cannot afford commercial fish but are in need of high-quality, nutritious diets.

CASE STUDY

Ugandan mums get fish booster to fight COVID-19

A new fish-enriched maize meal has been fast-tracked to mothers and their young children in a Ugandan hospital to help improve their nutritional status and reduce the impact of COVID-19.

Pregnant and lactating mothers, and children aged below 5 years, are projected to be the most affected by COVID-19 in Uganda because they are at a higher risk of malnutrition – due to their high daily nutrient requirements – making them more vulnerable to infection.

In response to the Ugandan President's appeal for help, the NutriFish project team prioritised its development of a nutrient-dense fish-enriched maize meal flour and donated 2.5 tonnes of it to the Mwanamugimu Nutrition Rehabilitation Unit at Mulago Hospital in Kampala.

NutriFish is one of 9 projects under Cultivate Africa's Future (CultiAF) – a co-funded partnership between ACIAR and Canada's International Development Research Centre (IDRC) – which aims to improve food and nutrition security, resilience and gender equality across eastern and southern Africa.

'The fish-enriched composite flour will be used to prepare meals for mothers whose children are admitted to the unit – it can be used to replace ordinary maize flour,' says Dr Dorothy Nakimbugwe, NutriFish project coordinator, Director of Nutreal Ltd, Uganda, and Associate Professor, Department of Food Technology and Nutrition, School of Food Technology, Nutrition and Bio-Engineering at Makerere University.

Through improved post-harvest and processing technologies of fish, NutriFish aims to address the nutritional needs of people who cannot afford expensive commercial fish but who are in critical need of high-quality, nutritious diets.

Dr Nakimbugwe explains that the flour can be prepared as 'posho', a traditional Ugandan meal made from maize. The flour comprises a mix of maize flour certified as 'high quality' by the Uganda National Bureau of Standards, Silver fish (mukene) and nutritious amaranth grain (dodo seeds). A 200gm portion provides 32% energy, 40% protein, 28% iron, 56% zinc and 36% vitamin A of recommended daily requirements.

After the women and their children are discharged from the unit and for the following 3 months, each mother will be provided with 10kg per month of the composite flour for use at home to help prevent relapse into malnutrition and returning to the hospital for treatment.

Presentation of the fish-enriched maize flour to Hon. Mary Karooro Okurut, the Minister in Charge of General Duties in the Office of the Prime Minister, Uganda. Photo: Zaam Ssali.

Our research program

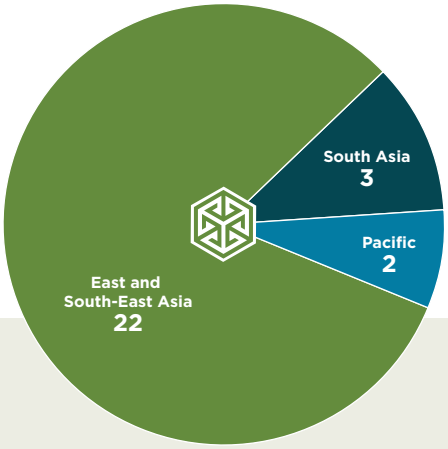
The ACIAR research structure focuses on 10 programs of work. These programs cover key agriculture sectors (Crops, Livestock Systems, Fisheries, Forestry and Horticulture), the science needed to sustain the resource base (Soil and Land Management, Water and Climate Change) and disciplines that generate economic and social benefits (Agribusiness and Social Systems).

Research programs

Agribusiness

Unlocking economic opportunities for farmers

The Agribusiness Program works to improve business outcomes for smallholder farmers, communities and industries. It involves research at all points along the agricultural, forestry and fisheries value chains, including inputs, production and harvest, and post-harvest activities of packaging, transport and storage, processing, marketing and sales.



25
ACIAR projects

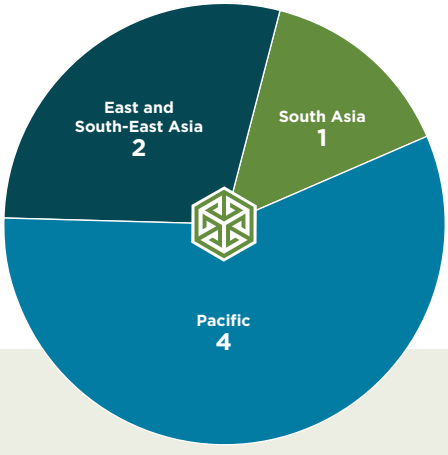
$2.9 million
invested into research projects

6%
of ACIAR project investment

Climate Change

Transforming food systems under pressure

The Climate Change Program progresses the science and practice of how to transform food systems and livelihoods that are under the most pressure to adapt or to reduce greenhouse gas emissions. The program aims to translate sciences that often seem conceptual into tangible projects and pathways for change. The program also contributes to global, multilateral collaborations and dialogues on climate change – emphasising knowledge sharing to accelerate climate response. The program is relatively new but growing fast.



6
ACIAR projects

$0.5 million
invested into research projects

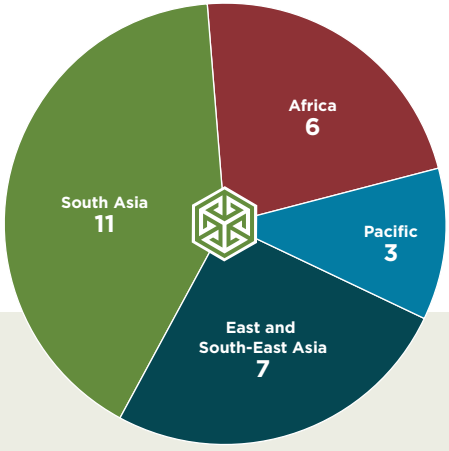
1%
of ACIAR project investment

NOTE: Charts will not always reflect the sum of total projects per program as it shows projects by region. If a project is in multiple regions, it will be counted for each region.

Crops

Cultivating productive and sustainable crops

The Crops Program aims to increase the productivity and sustainability of major crops by exploring improved varieties and new crop management methods. The program is built on 2 complementary themes of genetics and sustainable intensification and diversification.



22
ACIAR projects

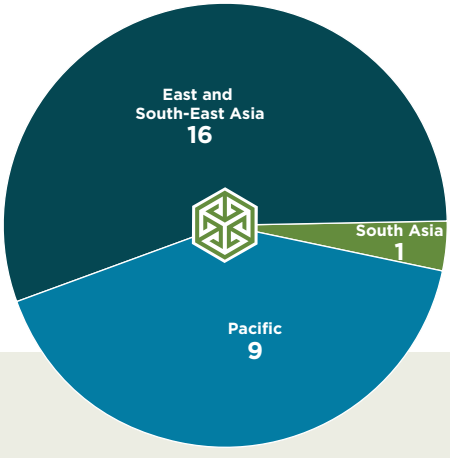
$5.4 million
invested into research projects

11%
of ACIAR project investment

Fisheries

Building productive aquatic farming systems and sustainable fisheries

The Fisheries Program brokers research partnerships to improve food security and fishers' livelihoods through productive aquatic farming systems and sustainable wild-catch fisheries. It aims to improve human health and wellbeing by making food systems and policies more nutrition-sensitive.



25
ACIAR projects

$7.6 million
invested into research projects

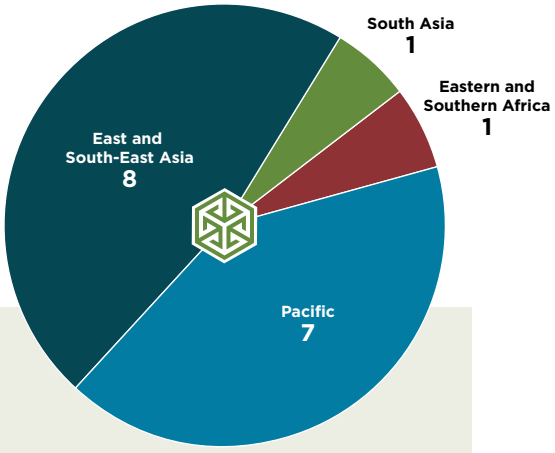
15%
of ACIAR project investment

NOTE: Charts will not always reflect the sum of total projects per program as it shows projects by region. If a project is in multiple regions, it will be counted for each region.

Forestry

Scientific support to establish, manage and sustainably use forests

The Forestry Program contributes to conservation and rehabilitation of natural resources to establish, manage and sustainably use forests. This provides social, economic and environmental benefits to partner countries and Australia.



17
ACIAR projects

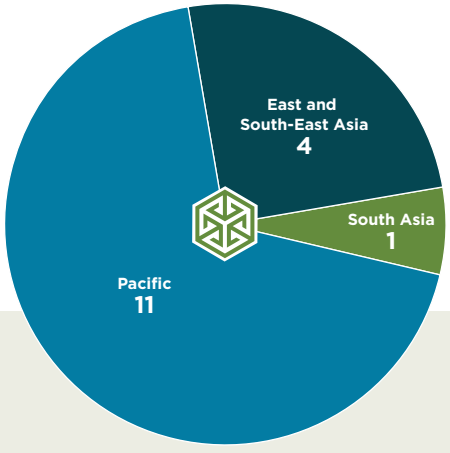
$4.3 million
invested into research projects

8%
of ACIAR project investment

Horticulture

Improving fruit, vegetable and ornamental crop production

The Horticulture Program aims to improve the productivity, profitability and sustainability of fruit, vegetable, ornamental and beverage crops in developing countries to improve livelihoods and deliver safe, nutritious food.



16
ACIAR projects

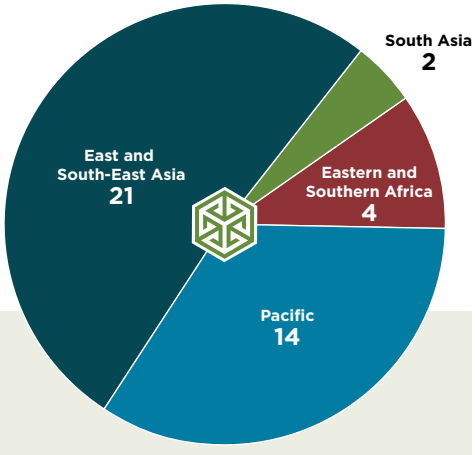
$5.5 million
invested into research projects

11%
of ACIAR project investment

Livestock Systems

Developing more productive, profitable and sustainable livestock systems

The Livestock Systems Program brokers research partnerships to develop more productive, profitable and sustainable livestock systems for the benefit of humans, animals and the environment. The program takes a holistic view of livestock systems, looking at animal health and production technologies within the broader sociocultural, gender, policy and economic contexts.



36
ACIAR projects

$7.5 million
invested into research projects

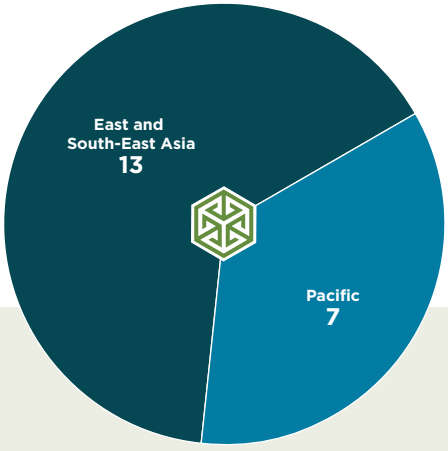
15%
of ACIAR project investment

NOTE: Charts will not always reflect the sum of total projects per program as it shows projects by region. If a project is in multiple regions, it will be counted for each region.

Social Systems

Putting people at the centre of agricultural research-for-development

The Social Systems Program takes a people-centred approach to agricultural research-for-development to reduce poverty. Demographic issues such as gender, age, education, income, assets and distance to market are considered in project design to ensure equitable development.



20
ACIAR projects

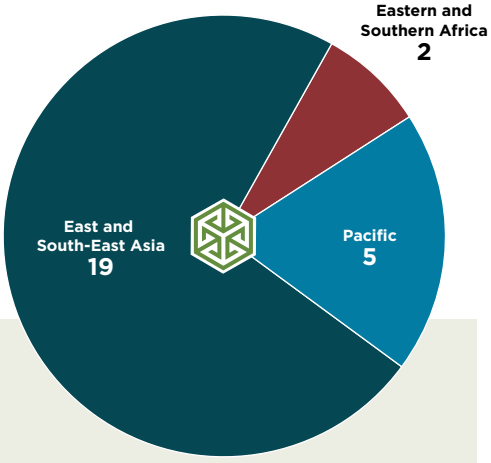
$3.1 million
invested into research projects

6%
of ACIAR project investment

Soil and Land Management

Improving fruit, vegetable and ornamental crop production

The Soil and Land Management Program aims to help smallholders boost productivity through sustainable use of limited resources in a changing climate. Ensuring that agricultural production is sustainable and benefits smallholder farmers is a key challenge for long-term food security.



24
ACIAR projects

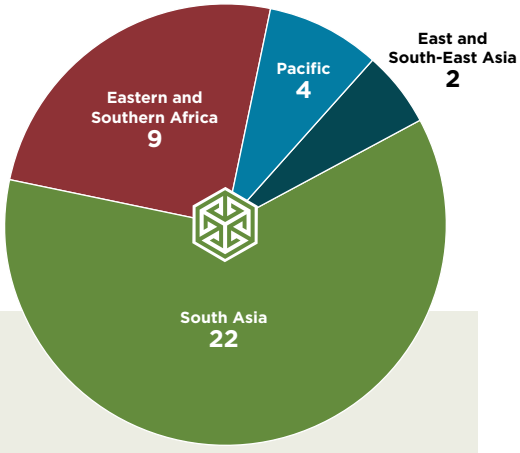
$6.9 million
invested into research projects

14%
of ACIAR project investment

Water

Improving agricultural water management through innovative approaches

The Water Program addresses the challenge of efficient, sustainable water use to support agricultural production in a context of increasingly uncertain climate, competition from other sectors and declining water quality. The program works to improve agricultural water management through innovative technical and policy approaches.



27
ACIAR projects

$3.6 million
invested into research projects

7%
of ACIAR project investment

NOTE: Charts will not always reflect the sum of total projects per program as it shows projects by region. If a project is in multiple regions, it will be counted for each region.

Our impact

A$104.7 billion
total benefit from ACIAR research project investments since 1982*

A$99.7 billion
total benefit to developing country partners from ACIAR research project investments since 1982*

A$17.40
economic return for each dollar invested in bilateral research project since 1982*

Evaluating the impact of our investments helps us refine our priorities and strengthen the benefits of our research for our partner countries as well as Australia's agricultural sector. We also measure and report on our impact to be accountable to our Minister, the Australian Government and the Australian public.

Our Portfolio Planning and Impact Evaluation team develops organisation-wide performance frameworks and evaluates our investments in the medium and long term.

The team keeps up to date with the latest thinking on the design of effective research-for-development portfolios and invests in developing methods to appropriately monitor and assess the contribution of our investment to development outcomes.

In 2020–21, the Portfolio Planning and Impact Evaluation team commissioned medium-term outcome evaluations and longer-term impact assessments. In the past year ACIAR has completed outcome evaluations of:

- Improving opportunities for economic development for women smallholders in rural Papua New Guinea (ASEM/2014/095)
- Increasing citrus production and value chains in Pakistan and Australia (HORT/2005/160, HORT/2010/002)
- Improving dairy production and strengthened dairy value chains in Pakistan through improved farm management improved extension services (LPS/2005/132, LPS/2010/002)
- Development of integrated crop management practices and mango value chain improvement in Pakistan and Australia (HORT/2005/153, HORT/2010/006, HORT/2005/157, HORT/2010/001)
- Enterprise-driven transformation of family cocoa production in East Sepik, Madang, New Ireland and Chimbu Provinces of Papua New Guinea (HORT/2014/096)
- Bougainville cocoa (HORT/2014/094)
- Enhancing private sector-led development of the Canarium nut industry in Papua New Guinea (FST/2014/099)
- Supporting commercial sweetpotato production and marketing in the Papua New Guinea highlands (HORT/2014/097)

In addition 2 learning focused evaluations were conducted examining ACIAR's approach to designing and managing place-based, multi-sector programmatic investments. The evaluations focused on the Transformative Agriculture and Enterprise Development Program (TADEP) and the Agricultural Sector Linkages Program (ASLP).

Cumulative value of ACIAR investments

ACIAR has been systematically undertaking independent impact assessment studies of its portfolio of research activities for more than 30 years.

The estimated median benefit-to-cost ratio across the 100 projects studied shows that A$17.40 is returned for every A$1 spent. The total benefit from ACIAR research project investments is estimated to be A$104.7 billion in today's dollars. Of this:

- A$99.7 billion has been realised for developing country partners
- A$5 billion has been realised in Australia.

The benefits directly attributable to ACIAR funding more than covers not only our total expenditure across these projects, but also our total investment since our inception (approximately A$3.28 billion).

Highlights

Improving income for women, climate resilience in Fijian papaya industry

Pacific | Horticulture | Secretariat of the Pacific Community (SPC)

The Fijian papaya industry was susceptible to natural disasters, shortages of air freight capacity, and post-harvest losses during the wet season, but an ACIAR-supported project has boosted its resilience and profitability.

The industry now has more capacity to recover from natural disasters. During and following the project, growers, extension officers, researchers and the value chain have been trained. Most papaya growers in Fiji now use cyclone management and recovery techniques. Following project recommendations, the industry is slowly relocating to more sheltered and sloped land to avoid floods and cyclone damage.

Women and youth have also benefited from a more resilient papaya sector. Smallholder papaya is grown by family units but around 30% of these enterprises are headed by females and 5% are headed by growers under 30 years of age. Helping these groups gain skills required for modern commercial horticulture has improved their employment opportunities.

Smallholder enterprises adopting project recommendations are estimated to have realised a 20.5% increase in annual income. In total, a present value benefit of $A0.822 million has been estimated for rural women in Fiji as a result of the project.

Building agricultural and business acumen of PNG women smallholders

Papua New Guinea | Social Systems | University of Canberra

An ACIAR project building agricultural and business acumen amongst women smallholders has improved gender equality, family livelihoods and food security in PNG.

Many farming families involved in the project improved communication within their households and began to better understand and re-balance gender roles around household and farming labour. Following leadership training, women broadened their goals and took up leadership roles and generally gained respect in their village due to their new skills and knowledge.

Improved economic outcomes also resulted with evidence of widespread adoption of family team-based farming practices, new agricultural practices and business-like approaches to farming which increased incomes and food security. The families involved make joint decisions about money more regularly, and this is having a ripple effect beyond just those directly involved in the project.

Increase sales, profits for Pakistan dairy farmers

Pakistan | Livestock Systems | Charles Sturt University

It was about starting small and building scale for a project that piloted dairy farming extension approaches that prioritised engagement with poor farmers throughout Pakistan.

Farmers' adoption of scientific and extension knowledge and practices developed through the project have resulted in recorded increases in sales and profits from increased milk yields, healthier calves, and farmer diversification into milk value added products such as ghee, cream, ice-cream, and yogurt.

Extension workers delivered inclusive extension services that utilised a 'whole family extension approach'. The approach recognises the value of women, young people and children's participation in the smallholder farm system and has resulted in adoption rates of up to 80% of extension knowledge and practices, much higher than previously. Reducing the productivity impacts of barriers that limit women's participation is important to sustaining gains as women contribute up to 80% of work inputs in dairy farms.

Greatest impact for those below the poverty line

Philippines | Soil and Land Management | Queensland Horticulture Institute, Department of Primary Industries, Queensland

ACIAR-funded Landcare projects in the Philippines built directly on tested and proven conservation agriculture practices, using approaches and mechanisms to support widespread adoption.

A 2019 assessment of results showed that the project had the greatest impact on those who were below the poverty line and made changes. While income improvements were modest, the beneficiaries said additional income generated from vegetables, banana, coconut, fruit and forest trees enabled them to buy more food, acquire assets, send their children to school and build or repair their houses.

Additionally, adoption of contour farming resulted in positive environmental changes (reduced soil erosion in their farms, improved farm conditions and less occurrence of landslide). Some beneficiaries even said that their participation in the project led to some social changes, including gaining recognition for farming expertise and personal growth and confidence building.

ACIAR-supported research has assisted work to advance dairy production and dairy value chains in Pakistan.

Our benefit to Australia

A$5 billion
total benefit to Australia from ACIAR research project investment

Supporting Australia's national interests by contributing to sustainable economic growth and enhanced regional stability ACIAR sits at the intersection of Australian agricultural research and its diplomatic outreach.

We have a strong track record of bringing Australian and international researchers together to improve sustainable agricultural productivity in both developing countries and Australia.

In this way, our investments contribute to Australia's trade and development policy efforts for a transparent, and predictable rules based global trading system.

We work with partners across the Indo Pacific region to tackle the intersecting challenges of health security, food security, water security and biosecurity, which all ultimately feed into our own national security.

Through our longstanding relationships with our partner countries, we provide opportunities for Australian scientists to conduct real world research that benefits our partner countries and Australian industry, by boosting productivity and sustainability of agricultural systems. The knowledge and technical capacity developed in ACIAR projects can help tackle common challenges of all farmers in the Indo-Pacific region, including Australia.

Through our work, ACIAR is delivering benefits to Australia by:

- forming part of Australia's pre-border defence to international biosecurity threats
- taking a One Health approach to tackle emerging zoonotic diseases (like COVID-19) that threaten human and animal health, economic development and the environment
- helping Australia and other countries meet their international commitments to reduce greenhouse gas emissions
- applying our research to challenges that improve the livelihoods of farmers in our partner countries and Australia
- providing jobs and exceptional career opportunities for Australian scientists and financial support to the university and research sector, especially in regional Australia.

ACIAR Project Leader Dr Wee Tek Tay examines Fall Armyworm samples in the CSIRO Lab.

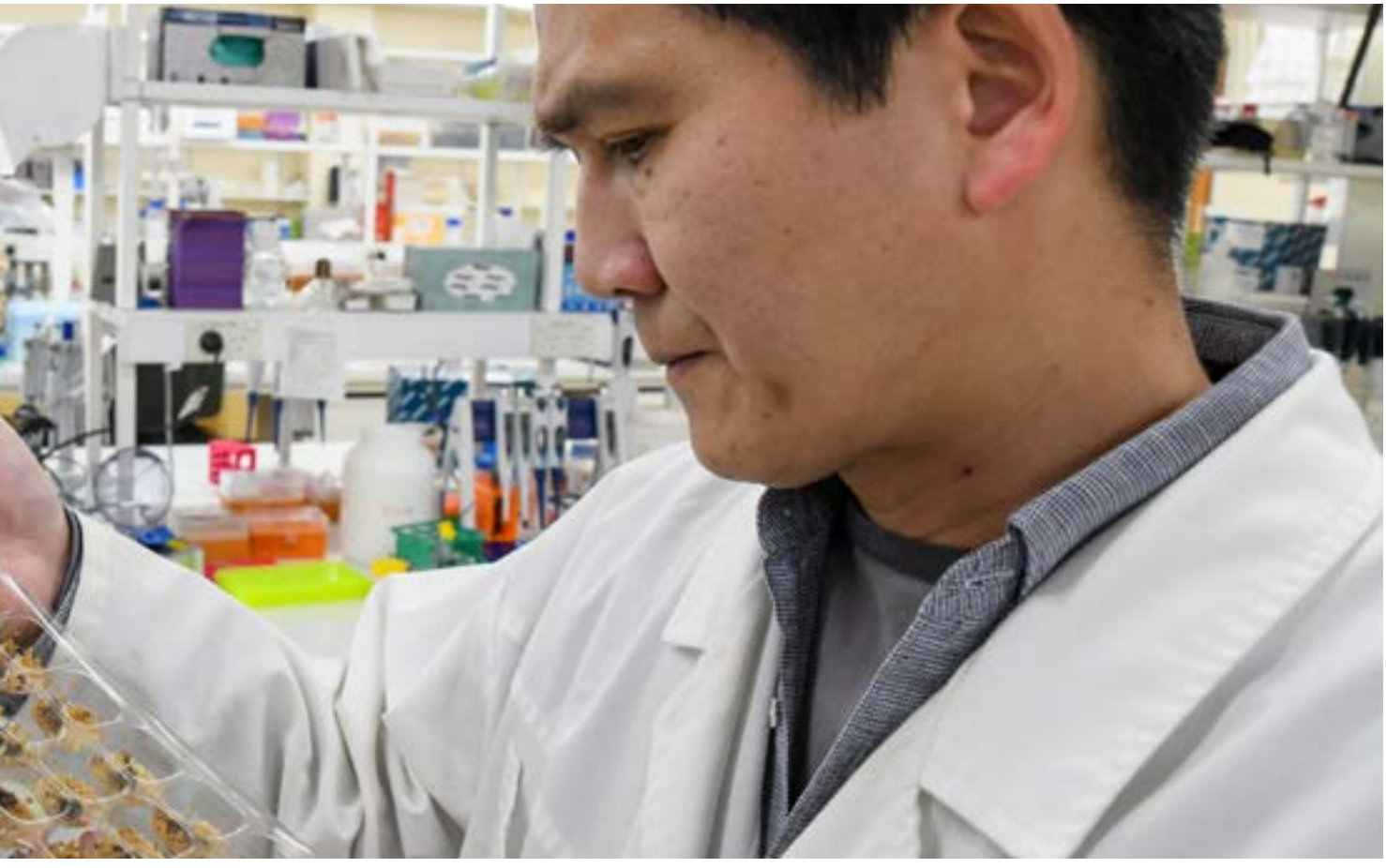
Biosecurity

The global cost of around 1.2 million invasive species is estimated at A$1.4 trillion per year – close to 5% of global gross domestic product. ACIAR has been supporting biosecurity-related research projects for almost 40 years, funding research to help understand and address threats to food security from animal and plant diseases and pests. ACIAR projects form part of Australia's pre-border defence to international biosecurity threats.

During 2020–21, ACIAR signed a partnership with the Plant Biosecurity Research Initiative aimed at strengthening plant biosecurity.

Some other biosecurity threats that ACIAR projects are tackling include:

- Fall armyworm: Understanding the genetics of fall armyworm, an invasive pest causing widespread crop destruction across the Indo-Pacific, is the focus of new ACIAR-funded research.
- Citrus greening disease: The Australian citrus industry is partnering with ACIAR on a project investigating citrus greening disease, a bacterial disease of citrus with no known cure.
- Wheat blast: In partnership with other governments and funding agencies, ACIAR is supporting an international effort to tackle an urgent threat to South Asia from wheat blast. This has resulted in the release of a high-yielding wheat variety that is resistant to wheat blast, which will be available to plant breeders worldwide, including Australia.



Australian scientists working with partners on pests and diseases in developing countries can help to limit the spread of major problems before they reach our borders.

CASE STUDY

Overseas research links boost Tasmanian farm trade

Tasmanian farmers and scientists are reaping benefits of ACIAR-funded agricultural research in developing nations.

University of Tasmania agronomist Dr Stephen Ives said being involved in research-for-development was incredibly valuable for protecting and promoting Tasmanian agriculture.

'Helping neighbouring nations by sharing Tasmania's agricultural expertise has untold benefits for local farmers and regional communities,' Dr Ives said.

'We get to partner with overseas institutions to build their capacity in finding improved ways of farming.

'For example, we have had Vietnamese researchers in Tasmania working to enhance prime lamb performance and meat quality by using omega-3 PUFA rich flaxseed and canola oil dietary supplements.'

Another research project in Tasmania is being conducted by a young Vietnamese researcher to test alternative perennial legume species in mixed swards, using alternative sowing techniques.

Dr Ives said being involved with research in developing nations created partnerships, improved research capacity, built trade connections and opened new markets.

ACIAR investments also bring practical benefits for Tasmanian biosecurity. Australian scientists working with partners on pests and diseases in developing countries can help to limit the spread of major problems before they reach our borders.

ACIAR often supports Australian researchers to work in neighbouring countries to tackle a shared challenge. For example, research to tackle productivity problems associated with plant viruses in sweetpotato crops in Papua New Guinea has led to virus therapy techniques and virus-free planting material being adopted as the foundation for a more productive sweetpotato industry in Australia.

Professor Campbell said the research funding flowed into dozens of regional communities around Australia. 'The University of Tasmania is one of more than 460 ACIAR research partners. We are an important source of funding for regional institutions, with flow-on benefits for regional centres,' he said.

Dr Ives said ACIAR-funded research had helped raise the profile of the University of Tasmania and the Tasmanian Institute of Agriculture on a global stage.

*Adapted from an article originally published in the June 2021 edition of *Farming Tasmania*, a publication distributed by the Tasmanian Farmers & Graziers Association.

Dr Stephen Ives from UTAS shares knowledge with Vietnamese researchers.

Our influence and impact

139,516 users
ACIAR website

1883
subscribers to *Partners* magazine

83,300
followers on social media

439,271 million
ACIAR website page views

Through our outreach activities, we aim to communicate the value and impact of our research investments.

We are also responsible for demonstrating the value of government investment through the aid program in international agricultural research to the Australian public.

With COVID-19 travel and event restrictions, communicating to and engaging with our stakeholders is more important than ever. During 2020–21, the ACIAR Outreach team undertook a range of activities to raise awareness of ACIAR-funded research.

During the year, ACIAR Outreach advanced its engagement with our domestic stakeholders across Australia's agriculture sector – including both research and industry stakeholders. We listened to their feedback to better understand their perception of us and are shaping our engagement accordingly. This is fundamental to ACIAR because our work is closely aligned with the Australian research sector and the success of Australian agriculture overall.

We also participated in, organised, hosted and sponsored events. A key event included hosting the 10th Annual Council Meeting of the Global Research Alliance on Agricultural Greenhouse Gases (GRA), which was held virtually in March. Australia formally assumed the Chair of the GRA at the meeting. With ACIAR assigned as Australia's lead representative on the GRA, our CEO Professor Andrew Campbell chaired the GRA Council meeting. Leading scientists, researchers and policymakers from 64 member countries and 24 global partner organisations joined the meeting to share knowledge and increase cooperation to improve agricultural productivity while reducing greenhouse gas emissions.

With the Crawford Fund, ACIAR co-hosted a side event to the GRA Council meeting, which focused on what farmers are doing and can do to mitigate greenhouse gas emissions.

This event was Australia's first Independent Dialogue as part of the lead up to the UN Food Systems Summit – meaning it contributed to the Summit's ambitious vision and objectives in the Decade of Action to achieve the Sustainable Development Goals by 2030.

ACIAR also took part in many other Dialogues and co-convened 2 others.

ACIAR produces a diverse range of publications to capture and share the results and experience gained through our research partnerships. In 2020–21, ACIAR published 16 books and reports, covering topics as diverse as mungbean production in Cambodia to supporting smallholder famers in conflict-vulnerable regions and managing sustainable grasslands in China.

In our response to COVID-19 we also published 2 key reports to assist with the rapid response to help target resources to help reduce the impact of COVID-19 on food systems in our partner countries. The second of these reports was launched online in November from the Australian National University. The stage 2 assessment was led by a joint team from the ANU, CSIRO and partner agencies in the assessment focal countries of Indonesia, Pacific Island countries (Kiribati, Tuvalu, Samoa, Tonga, Solomon Islands, Vanuatu and Fiji), Papua New Guinea, the Philippines and Timor-Leste. It warned that the pandemic is exacerbating existing threats to food security that will have long-term implications for the Indo-Pacific region.

We also published field guides and recipe books, our quarterly magazine, *Partners in Research for Development* and our regular ACIAR newsletter distributed via email.

Our social media channels continue to be a key communication tool for the organisation. With a consolidated effort, we have seen our followers across Facebook, Twitter, Instagram and LinkedIn continue to grow and engage further in 2020–21.

We continued to develop our network of communications professionals in 5 country offices: Fiji, Kenya, Papua New Guinea, the Philippines and Vietnam. The network enables ACIAR to find and tell great local stories and increase engagement with our partners and stakeholders in-country. Additional communication support has been provided to those who have not yet got an in-country communications officer.

CASE STUDY

Connecting global players in food loss research

Around one-third of food produced globally is lost or wasted. Reducing this is key to ensuring that there is enough food for everyone while simultaneously reducing the demand for resources to produce it.

In June 2021, as part of the United Nations Food Systems Summit, ACIAR and its long-term partner Canada's International Development Research Centre (IDRC) co-convened a Food Loss Research Dialogue. The online event attracted 93 research leaders from around the world to discuss the global problem of food loss and advance planning and cooperation to reduce it.

Of the attendees 52% were female, were female, and half were from developing countries. The diversity of participation supported the Summit's principles of engagement and successfully fostered inclusive and respectful conversations.

Participants examined the different dimensions to food loss globally and how to develop locally relevant solutions to reduce food loss. The outcomes were submitted to the Summit and will be used to shape global action towards transforming food systems.

As part of the Dialogue event, ACIAR and IDRC also launched their Food Loss Research Program, a joint, co-funded initiative that will fund projects to reduce food loss in partner countries.

IDRC President Dr Jean Lebel said, 'Reducing food loss in developing countries will help combat hunger, raise incomes and improve food security.'

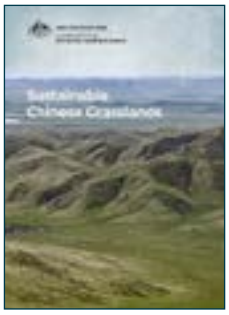
The Food Loss Research Program marks the latest collaboration between ACIAR and IDRC.

The ACIAR–IDRC partnership supports the development of both countries' international research networks that deliver domestic benefits and progress towards the Sustainable Development Goals.

'By working together, we have a wider reach and a bigger impact,' said ACIAR CEO Professor Andrew Campbell.

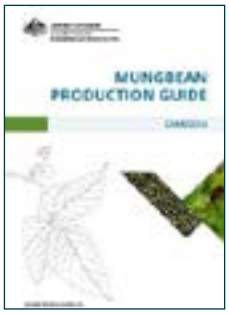
Scientific publications

ACIAR produces a diverse range of publications that capture and share our results and experience. Our guides and 'how to' manuals provide practical information generated by research projects across the Indo-Pacific region. Our publications cover many aspects of agriculture, fisheries and forestry and are useful to farmers, extension agencies and community organisations, and are valued by scientists, research leaders and policymakers. Publications produced in 2020–21 included:



Sustainable Chinese Grasslands

Editor
David Kemp

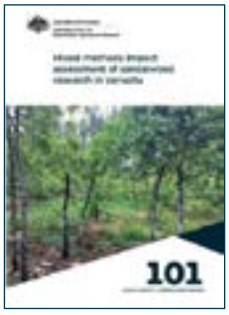


Mungbean production guide for Cambodian conditions

Authors
R. Martin, S. Montgomery, S. Yous, R. Rien

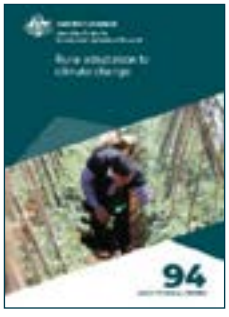
Cassava value chains and livelihoods in South-East Asia

Authors
Jonathan Newby, Dominic Smith, Rob Cramb, Erik Delaquis and Lava Yada



Impact of sandalwood research in Vanuatu

Authors
Federico Davila, David Vanzetti and Thomas Sloan



Rural adaptation to climate change

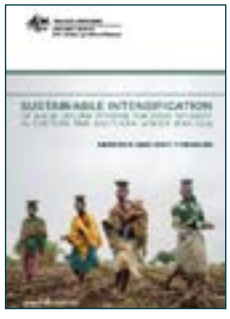
Authors
J. Huang, J.Wang, KK. Dang, H. Plunkett, Y. Xu and C. Findlay

Tomato, capsicum, chilli and eggplant: a field guide for the identification of insect pests, beneficial, diseases and disorders in Australia and Cambodia | Khmer

Authors
Sandra McDougall, Andrew Watson, Ben Stodart, Tony Napier, Gerard Kelly, David Troldahl and Len Tesoriero

Cooking fish and seafood in Timor-Leste: recipes and stories of traditions and livelihoods

Authors
A. Duarte, K. Hunnam and H. Eriksson



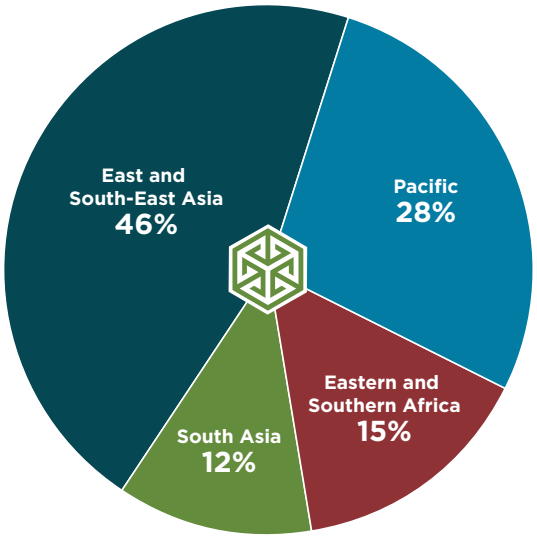
Sustainable intensification of maize-legume systems for food security in eastern and southern Africa (SIMLESA): Lessons and way forward

Authors
E. Wilkus, M. Mekuria, D. Rodriguez and J. Dixon

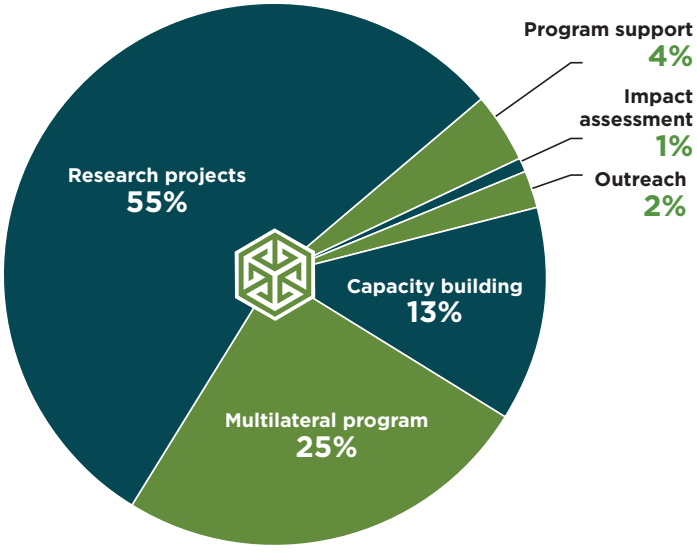
Financial overview

Research projects by region and country	Actual (A$)
Pacific	14,622,898
Papua New Guinea	4,429,624
Pacific island countries	9,098,499
Timor-Leste	1,094,775
East and South-East Asia	27,877,088
Cambodia	2,690,987
Indonesia	7,926,835
Laos	3,312,592
Myanmar	2,651,889
Philippines	3,220,863
Vietnam	3,955,014
South Asia	10,896,214
Bangladesh	2,463,231
India	582,514
Nepal	677,703
Pakistan	1,896,159
Sri Lanka	403,635
Eastern and Southern Africa	9,611,610
Burundi	54,069
Ethiopia	1,595,968
Kenya	1,074,795
Malawi	520,677
Mozambique	1,023,377
Rwanda	341,067
South Africa	581,497
Tanzania	464,165
Uganda	994,195
Zambia	189,812
Zimbabwe	605,060
Total research projects	51,866,859
Research projects	51,866,859
Multilateral program	23,320,545
Capacity building	12,252,260
Outreach	2,219,422
Impact assessment	1,116,271
Program support	4,231,677
TOTAL	95,007,034

Research expenditure by region 2020–21



Research expenditure by operational area 2020–21



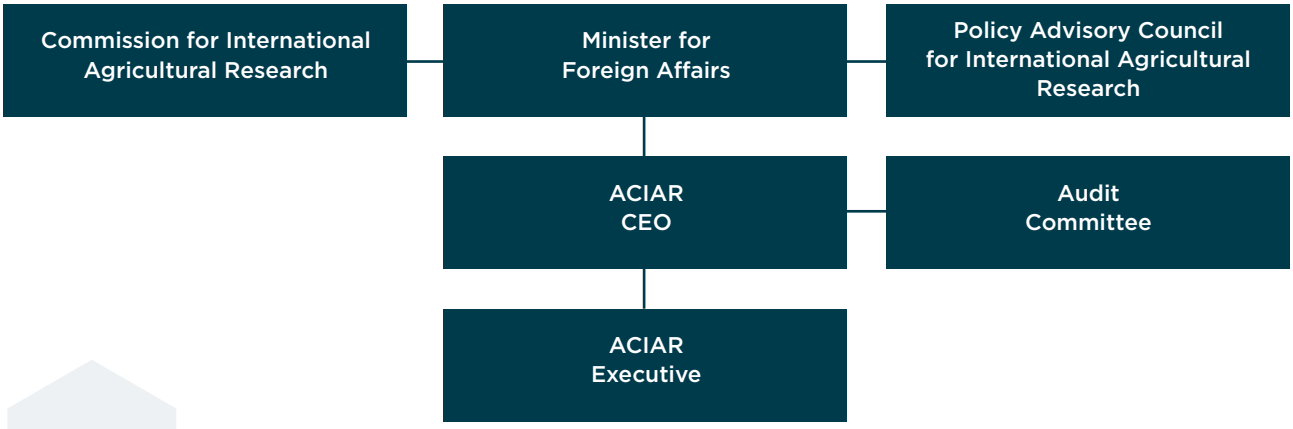
How ACIAR operates

Established under the *Australian Centre for International Agricultural Research Act 1982* (the ACIAR Act), ACIAR is a non-corporate Commonwealth entity under the *Public Governance, Performance and Accountability Act 2013* and the *Public Service Act 1999*. We operate as a statutory agency within the portfolio of Foreign Affairs and Trade.

Our governance structure

The agency has an executive management governance structure. The Chief Executive Officer (CEO) manages the administrative and financial affairs of ACIAR and its staff, subject to, and in accordance with, any directions given by the Minister for Foreign Affairs. The CEO is supported by the Audit Committee, which provides independent assurance to the CEO on financial and performance reporting responsibilities, risk oversight and management, and systems of internal auditing of ACIAR.

Also established under the ACIAR Act is the Commission for International Agricultural Research, which provides collective decision-making and expert strategic advice to the Minister on the operations of ACIAR; and the Policy Advisory Council for International Agricultural Research, which provides advice to the Minister on the way Australia supports international agricultural research and development.



Commission for International Agricultural Research

The Commission in 2020–21 consisted of a chair and 6 other Commissioners:

- Mrs Fiona Simson (Chair)
- Professor Andrew Campbell FTSE FAICD
- Dr Sasha Courville
- Professor Lindsay Falvey
- Ms Su McCluskey MAICD
- Dr Beth Woods
- Mr Tony York

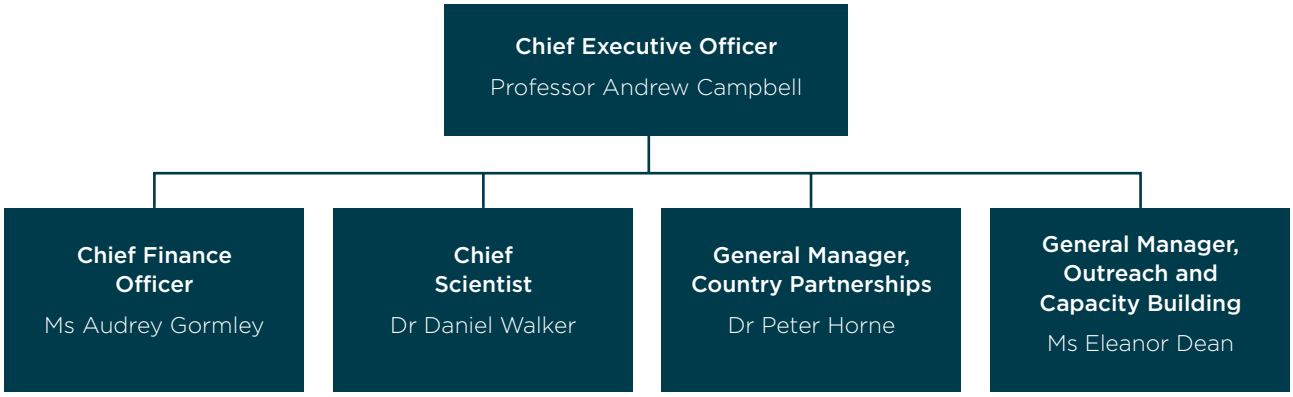
Policy Advisory Council for International Agricultural Research

The Council's membership is limited to 13, comprising a president, the Secretary of the Department of Foreign Affairs and Trade or his/her nominee, and 9–11 other members appointed by the Minister.

- Professor Kym Anderson AC (President to 30 September 2020)
- Professor Wendy Umberger (President from 1 October 2020)
- Dr Audrey Aumua
- Professor Ramesh Chand
- Dr Sar Chetra
- Dr Reynaldo Ebora
- Dr Segenet Kelemu
- Professor Achmad Suryana
- Professor Teatulohi Matainaho
- Dr Nguyen Van Bo
- Dr Su Su Win
- Ms Frances Adamson

ACIAR Executive

The CEO leads an executive team of 5 that supports and advises the CEO on strategic priorities and corporate and operational policies.



Our staff

As at 30 June 2021

77
ACIAR staff

2 years
median length of APS service

ACIAR
70% female
30% male

ACIAR STAFF
82% full-time
18% part-time

57%
ongoing staff as % of total

42 years
average age of employee

10%
employee turnover

Key ACIAR staff*

ACIAR Executive

Chief Executive Officer
Professor Andrew Campbell
andrew.campbell@aciar.gov.au

General Manager, Outreach and Capacity Building
Ms Eleanor Dean
eleanor.dean@aciar.gov.au

Chief Finance Officer
Ms Audrey Gormley
audrey.gormley@aciar.gov.au

General Manager, Country Partnerships
Dr Peter Horne
peter.horne@aciar.gov.au

Chief Scientist
Dr Daniel Walker
daniel.walker@aciar.gov.au

Country and Regional Managers

Africa
Dr Leah Ndungu
leah.ndungu@aciar.gov.au

China
Mr Wang Guanglin
guanglin.wang@aciar.gov.au

Laos, Cambodia, Myanmar and Thailand
Ms Dulce Simmanivong
dulce.simmanivong@aciar.gov.au

Indonesia
Ms Mirah Nuryati
mirah.nuryati@aciar.gov.au

Pacific region
Ms Gay (Mai) Maureen Alagcan
mai.alagcan@aciar.gov.au

Pakistan
Dr Munawar Raza Kazmi
munawar.kazmi@aciar.gov.au

Papua New Guinea
Ms Doreen Iga
doreen.iga@aciar.gov.au

Philippines
Ms Hazel Aniceto
hazel.aniceto@aciar.gov.au

South Asia
Dr Pratibha Singh
pratibha.singh@aciar.gov.au

Vietnam
Ms Nguyen Thi Thanh An
an.nguyen@aciar.gov.au

Research Program Managers

Agribusiness
Mr Howard Hall
howard.hall@aciar.gov.au

Climate Change
Dr Veronica Doerr
veronica.doerr@aciar.gov.au

Crops
Dr Eric Huttner
eric.huttner@aciar.gov.au

Fisheries
Professor Ann Fleming
ann.fleming@aciar.gov.au

Forestry
Dr Nora Devoe
nora.devoe@aciar.gov.au

Horticulture
Ms Irene Kernot
irene.kernot@aciar.gov.au

Livestock Systems
Dr Anna Okello
anna.okello@aciar.gov.au

Social Systems
Dr Clemens Grünbühel
clemens.grunbuhel@aciar.gov.au

Soil and Land Management
Dr James Quilty
james.quilty@aciar.gov.au

Water
Dr Robyn Johnston
robyn.johnston@aciar.gov.au

Multilateral Engagement
Dr Julianne Biddle
julianne.biddle@aciar.gov.au

Economics and Policy
Dr Todd Sanderson
todd.sanderson@aciar.gov.au

Portfolio Planning and Impact Evaluation
Ms Bethany Davies
bethany.davies@aciar.gov.au

As of 31 October 2021


ACIAR
Australian
Aid