

# 2

## Global collaborations



# Global collaborations

## ACIAR works with international partners to foster and implement global research collaborations that support strategic development in agriculture, fisheries and forestry.

The ACIAR 10-Year Strategy 2018–2027 proposes that by leveraging strategic international partnerships we can continue to influence and promote more productive and sustainable agricultural systems for the benefit of low-income and lower-middle-income countries and Australia. ACIAR builds and maintains multilateral partnerships with a range of international organisations, institutes and associations that are engaged in agricultural research and the delivery of global public goods. Our goal is to be a valued, engaged donor and a strong, innovative partner in international agricultural research.

The funding and support of international agricultural research centres is one of the roles of ACIAR, mandated by the ACIAR Act. We foster and maintain active working relationships with international agricultural research centres by providing timely, reliable and consistent funding, as well as strategic advice on research and governance.

The largest component of support is provided to CGIAR, an international network of research centres dedicated to reducing rural poverty, increasing food and nutrition security for human health, and improving natural resource systems and ecosystem services.

In addition to CGIAR, we establish and foster partnerships with other international research centres and networks relevant to our mission.

We also develop and manage co-investment alliances and partnerships with like-minded organisations and donors. Co-investment partnerships demonstrate deep trust, enabling partners to leverage capacity and complement research strengths to build a critical mass of resources to invest in more ambitious research.

During 2022–23, we will seek to strengthen multilateral collaborations by serving the international research community as:

- » an engaged investor
- » a strategic research facilitator
- » a broker of Australian science (by engaging relevant Australian research expertise).



### Australia as a global contributor

Partnerships built by ACIAR Multilateral Collaborations contribute to Australia's global citizenship goals. Our deep engagement in collaborative international research maximises the influence of the Australian agricultural innovation system and the international standing of Australian agriculture.

# Investing in global agricultural innovation

**Australia has invested in CGIAR since it was established in 1971. CGIAR is the world's largest global agricultural innovation network, comprising 15 international agricultural research centres with more than 9,000 scientists who work mostly in low-income and lower-middle-income countries.**

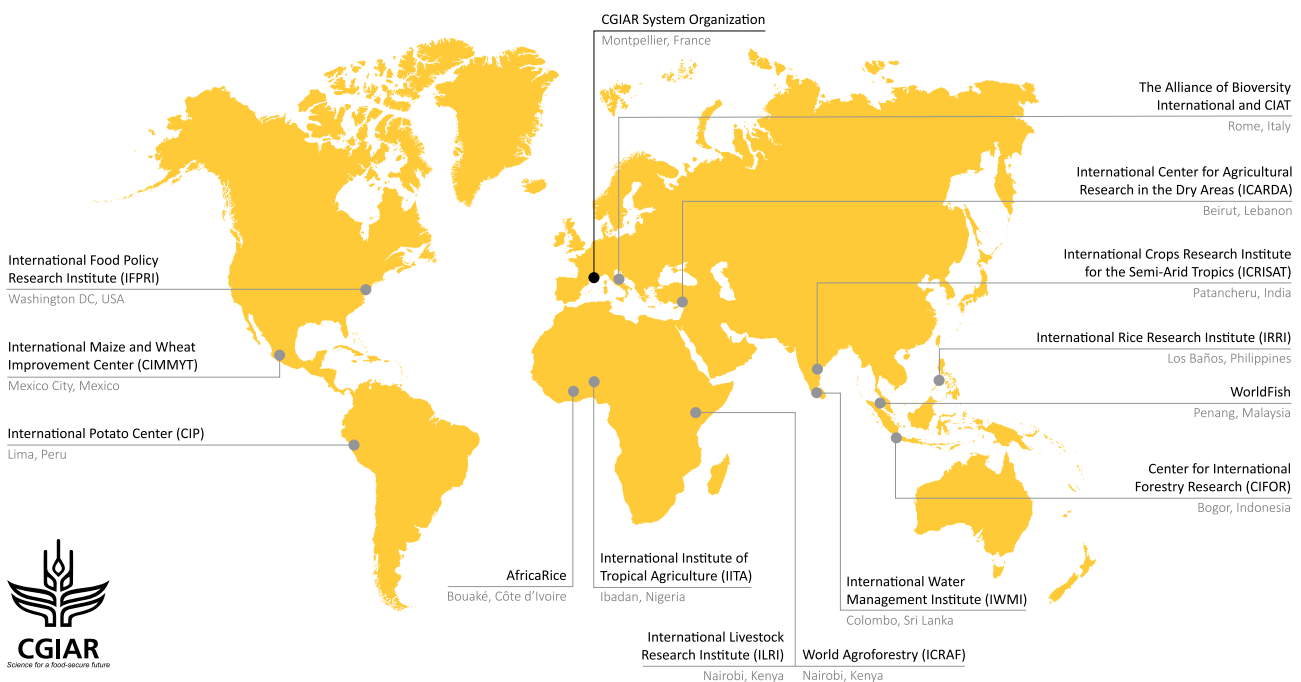
With 50 years of experience, a presence in 89 countries, and a deep knowledge of local customs, values and markets, CGIAR research centres work closely with more than 3,000 partner organisations. These include national and regional research institutes, civil society organisations, academia and the private sector. CGIAR research centres work towards a world free of poverty, hunger, malnutrition and environmental degradation. The centres conduct world-class, interdisciplinary research that combines biophysical and social sciences to deliver development impact at scale. CGIAR operates on an annual budget of about US\$900 million. The location of these centres is shown in Figure 2.1.

CGIAR is better connected to the global development agenda than any other agrifood research entity. CGIAR research centres are responsible for hands-on research programs and operations guided by policies and research directions set by the CGIAR System Board with guidance from the CGIAR System Council. A strong research-based relationship between ACIAR and CGIAR was forged soon after the establishment of ACIAR in 1982. With an amendment to the ACIAR Act in 1992, ACIAR was then mandated as Australia's representative to CGIAR.

As a significant funder of CGIAR, Australia has high-level representation on CGIAR governance bodies. The CEO of ACIAR represents Australia on the System Council.

During 2022–23, CGIAR will finalise reforms to a more unified and integrated One CGIAR. This will better equip the network to swiftly respond to new challenges in international agricultural research while keeping up with emerging crises. In essence, the reform involves a move from the network of 15 independent international research centres, currently configured mostly around agricultural commodities, to a more cohesive structure under a common board. ACIAR has been deeply engaged in the reform process, which has involved profound change across CGIAR, its culture, values, people, policies and systems. We have actively contributed to the reform to ensure CGIAR is well-placed to deliver against both the UN Sustainable Development Goals and the Paris Agreement under the UN Framework Convention on Climate Change, as well as to attract new funder contributions.

Australia contributes to CGIAR alongside the World Bank, United States of America (USA), Bill & Melinda Gates Foundation, Germany, India, United Kingdom, European Commission and Mexico among many others. Further information on CGIAR governance and funding can be found on the CGIAR Governance and CGIAR Dashboards sites on the CGIAR website. In addition to the governance role, provided to CGIAR by ACIAR, many Australian scientists contribute at the highest levels of leadership within the CGIAR and research centres.



**Figure 2.1** Agricultural research centres of the CGIAR system. Source: CGIAR

## CGIAR investment 2022–23

ACIAR provides unrestricted core funds (designated and undesignated) and restricted project funds to CGIAR. More than half of the total funding is unrestricted, and this is reviewed annually. Restricted funding is delivered through specific research projects delivered by individual centres of the CGIAR network. Australian support of CGIAR in 2022–23, through ACIAR, is forecast to be approximately A\$20 million (Table 1.3).

CGIAR implemented a new research portfolio, during 2021–22, that strives for global and regional impact by organising its work around **3 Action Areas**:

- » Systems Transformation
- » Resilient Agrifood Systems
- » Genetic Innovation.

These Action Areas fit the newly designed **2030 Research and Innovation Strategy**, which aims to ensure that research provides real solutions for development. This is a substantial shift in the way CGIAR works, and will be achieved following 7 new implementation approaches:

1. embracing a systems transformation approach
2. leveraging ambitious partnerships for change
3. positioning regions, countries and landscapes as central dimensions of partnership, worldview and impact
4. generating scientific evidence on multiple transformation pathways
5. targeting risk-management and resilience as critical qualities for food, land and water systems
6. harnessing innovative finance to leverage and deliver research through new investment and funding models
7. making the digital revolution central to our way of working.

To ensure research excellence and value for investment in CGIAR for Australia, during 2022–23 ACIAR will:

- » participate at the highest levels of governance of the CGIAR system, through membership and leadership on the CGIAR System Council, the Strategic Impact Monitoring and Evaluation Standing Committee and Investment Advisory Groups
- » continue our collaboration with other donors to CGIAR through participation in multi-funder activities that align with ACIAR strategy and Australian interests
- » coordinate Australian engagement with CGIAR, including consultation with Department of Foreign Affairs and Trade (DFAT) and other Australian organisations, primarily through the CGIAR Australian Leadership Group, established by ACIAR in 2015
- » involve ACIAR Research Program Managers in the technical oversight of CGIAR Research Programs.

### ACIAR hosts international ag research meeting

In November 2022, ACIAR, on behalf of Australia, hosted a meeting of the CGIAR System Council. The System Council is the vision, strategic direction and advocacy body of CGIAR and meets twice yearly, with approximately 70 delegates of high standing from across the globe.

The System Council Meeting was held in Brisbane, home of world-leading tropical and sub-tropical agricultural research. The meeting was timed to align with the TropAg International Agricultural Conference and a Food Diplomacy Dialogue hosted by the Commission for International Agricultural Research and the Policy Advisory Council.



### Impressive return on investment

CGIAR delivers impressive economic, social and environmental returns on research investment. Over the past 5 decades, the benefits of CGIAR investment are tenfold for each dollar invested.

A 2020 study calculated a benefit-cost ratio of 10:1 for CGIAR investment since 1961, which is primarily due to enhancing the yields of staple food crops in developing countries. There are additional less-easily measured payoffs such as greater food abundance, cheaper food, reduced rates of hunger and poverty, and a smaller geographical footprint of agriculture.

CGIAR research outputs have helped keep Australian farmers competitive in world markets by increasing yields and reducing costs. CGIAR germplasm has been incorporated into, and has greatly improved, Australian plant and livestock breeding programs. For example, 98% of all wheat grown in Australia is derived from CGIAR wheat germplasm. CGIAR germplasm is also prominent in improved varieties of sorghum, maize and chickpea in Australia.

Source: The payoff to investing in CGIAR research (2020)

# Partnering in global and regional programs

**In addition to our partnership with CGIAR, ACIAR has formal multilateral partnership arrangements with a number of international agricultural research centres and networks.**

During 2022–23, we will support global research collaborations with:

- » The Pacific Community
- » Asia-Pacific Association of Agricultural Research Institutions
- » World Vegetable Center
- » Centre for Agricultural Biosciences International.

## The Pacific Community

The Pacific Community (SPC), previously known as the Secretariat of the Pacific Community, has been the principal scientific and technical organisation working to support development in the Pacific region since 1947. SPC is an international development organisation owned and governed by 26 country and territory participants.

SPC provides a regional specialist technical expertise to strengthen or, in some cases, supplement regional and national capacity. Of SPC's core functions, some are of particular interest to ACIAR:

- » to strengthen sustainable management of natural resources (fisheries, forestry, land use, agriculture, minerals, water)
- » to improve pathways to international markets
- » to improve multi-sectoral responses to climate change and disasters
- » to advance social development through the promotion of human rights, gender equality, cultural diversity and opportunities for young people
- » to improve multi-sectoral responses to non-communicable diseases and food security.



SPC and ACIAR have worked in partnership for more than 30 years and SPC is a key partner of both ACIAR and DFAT. SPC helps deliver on Australia's strategies to support the production of strategic regional public goods with strong benefits for the region's agriculture, fisheries, forestry and biosecurity sectors.

ACIAR currently provides core and project funding to the Land Resources Division and the Fisheries Aquaculture and Marine Ecosystems Division. The current core strategic partnership agreement, associated with this funding, extends to December 2026.

The partnership between ACIAR and SPC supports the production and maintenance of scientific, technical and management capacities, and activities in agriculture and fisheries that provide shared benefits for agricultural development activities of Pacific island countries and territories. Our funding is also aimed at building stronger strategic relationships between our organisations, enhancing strategic management capacity in the Land Resources Division and strengthening capacity for coastal fisheries development in Fisheries Aquaculture and Marine Ecosystems Division.

SPC facilitates the participation and engagement of ACIAR in regional consultation processes such as Pacific Week of Agriculture and Forestry, Heads of Agriculture and Forestry Services, and Ministers of Agriculture and Forestry Services. During 2022–23, ACIAR and SPC will collaborate to progress strategic regional initiatives, particularly mitigating the impacts of current and future risks.

## Asia-Pacific Association of Agricultural Research Institutions

The Asia-Pacific Association of Agricultural Research Institutions (APAARI) promotes and coordinates the national agricultural research institutes in the Asia-Pacific region, through inter-regional and inter-institutional cooperation. APAARI's Strategic Plan 2017–2022, Pathways to strengthened agrifood research and innovation systems in Asia and the Pacific, identifies strategic priorities that are used to inform our input into its wider regional consultation process.

ACIAR has a history of working with and supporting APAARI. We provide annual core funding for research communication, knowledge management, advocacy for agricultural biotechnology, support for capacity building, and participation in expert consultations with national agricultural research system leaders in the region.

Coastal fisheries is a very important sector in Fiji and other Pacific island countries as it contributes to food security, protein and micro-nutrient uptake, subsistence aquaculture and supports livelihoods and income generation. Photo: Lorima Vueti

## World Vegetable Center

The World Vegetable Center (WorldVeg) is an international non-profit research and development institute committed to alleviating poverty and malnutrition in low-income and lower-middle-income countries through increased production and consumption of vegetables. It also manages the world's largest vegetable gene bank. WorldVeg undertakes research and development to realise the potential role of vegetables for healthier lives and more resilient livelihoods.

Through its extensive networks and research partnerships WorldVeg disseminates improved varieties of vegetable crops and promotes improved production methods to farmers. This results in higher vegetable harvests, higher incomes, more jobs and healthier, more nutritious diets.

Investment in WorldVeg is an investment in research into the nexus between agriculture, livelihoods, nutrition and health. ACIAR provides WorldVeg with both core funding and project-specific funding. ACIAR has a strategic partnership arrangement with WorldVeg, which supports breeding activities and capacity building in low-income and lower-middle-income countries in Asia and Sub-Saharan Africa. The partnership focuses on the development of improved vegetable varieties (49% funding allocation), introduction of agricultural practices (36%) and collaboration and capacity building of public and private seed sectors (15%).

ACIAR funding has enabled:

- » better conservation of vegetable crop biodiversity and development of more resilient crops to address current and future biotic and abiotic constraints to vegetable production in the context of climate change
- » development, evaluation and validation of good agricultural practices for vegetable production that are safe for consumers, profitable and sustainable for all value-chain stakeholders
- » collaboration to strengthen the capacity of smallholder farmers and national partners from both the public and private sectors in vegetable production and commercialisation.

WorldVeg has brought significant benefits to Australian agriculture, particularly through its mungbean breeding program, which has provided the varieties grown across much of northern Australia for many years. WorldVeg also holds breeds of tomato with genetic resistance to tomato yellow leaf curl virus, which poses an ongoing threat to the Australian tomato industry.



WorldVeg has brought significant benefits to Australian agriculture as well as international partners through its mungbean breeding program.

## Centre for Agricultural Biosciences International

The Centre for Agricultural Biosciences International (CABI) is an intergovernmental, not-for-profit organisation established by a UN treaty. Australia is a member country of CABI, along with 48 other member countries from Africa, Asia, the Americas and Europe.

CABI addresses issues of global concern through science, information and communication, with a focus on international development and research, publishing and microbial services. CABI works to improve global food security, combat threats to agriculture and the environment from pests and diseases, protect biodiversity from invasive species, and improve access to agricultural and environmental knowledge. CABI improves lives worldwide by providing information and applying scientific expertise to solve problems in agriculture and the environment.

Australia's funding and membership, through ACIAR, enables CABI to address key issues of importance to both organisations. The 4-year partnership (2019-23) between ACIAR and CABI supports PlantwisePlus, the CABI Development Fund and Australia's CABI membership (services relating to CABI's scientific expertise, products and resources). The CABI Development Fund invests in pilot projects to enable the development of strategies for climate-change adaptation and mitigation actions in smallholder agriculture. Australia's investment in CABI has contributed to improved agricultural outcomes for low-income and lower-middle-income countries and delivered benefits to Australian agriculture.

### Plantwise Plus program

The Plantwise program launched by CABI in 2011 is based on a network of plant clinics run by trained plant doctors to provide practical advice to smallholder farmers about plant health. The network also organises plant health rallies, mass extension campaigns and farmer-to-farmer sharing of information, and has helped more than 44 million smallholder farmers in 30 countries, and reduced the likelihood of a household falling into poverty by 5%.

In 2021, CABI launched PlantwisePlus, building on Plantwise, to support countries predict, prepare for and prevent potential plant pest and disease threats. The new program will give farmers the knowledge and services needed to improve crop production; raise awareness of agricultural best practice and nutritional information; provide access to affordable, more sustainable plant protection products; and create effective pest monitoring systems, enabling quick and effective responses to pest threats.



Ms Roseanne Mwangi is an entrepreneur under the icipe-implemented project, Insects for Feed (INSFEED). In 2022-23 ACIAR will strengthen its relationship with icipe, committing to the organisation as a strategic long-term funder and partner, in addition to existing research collaborations. Photo: Emmie Wachira

## International Centre of Insect Physiology and Ecology

The International Centre of Insect Physiology and Ecology (icipe) plays an important role in agricultural research for development, and in producing and maintaining global public goods in entomology.

ACIAR has engaged icipe as an implementing partner on research projects since 2015. In 2022, icipe is leading an initiative, in partnership with ACIAR and AgriFutures Australia, to accelerate insect farming as an emerging industry in Africa and Australia. The Emerging Insect Technology Hub (EIT-Hub) will centralise engagement and knowledge sharing around insects as food, animal feed and fertiliser, and bring together industry stakeholders, scientists and investors to discuss issues related to emerging insect technologies.

In 2022-23 ACIAR will strengthen its relationship with icipe, committing to the organisation as a strategic long-term (core) funder and partner. Formal partnership arrangement will be established to reflect the strength of the relationship between ACIAR and icipe, the alignment of organisational aims, and the important role of icipe in the global agricultural research landscape.

# Building strength through collaboration

**Co-investment programs enable ACIAR to harness the complementary skills of partners, leverage ACIAR funds, and engage in larger and more ambitious programs.**

Co-investment programs take many forms, from shared design and implementation of a suite of research, to programs designed to support industry and build capacity.

## International Development Research Centre

Our most significant partner in terms of co-investment is Canada's International Development Research Centre (IDRC). IDRC was a model for ACIAR when Sir John Crawford submitted his recommendation to Prime Minister Fraser in 1981 to establish a centre for international agricultural development in Australia. Of all our partners, IDRC is most like ACIAR in that it is a specialist statutory agency investing in research as a form of strategic official development assistance.

IDRC has an agreement with ACIAR to build collaborations on a range of research initiatives of mutual interest until 2027. Current co-investments are 50:50 partnerships and include:

- » Cultivating Africa's Future Fund (CultiAF2), CA\$20 million in total, described on page 148,
- » Food Loss Research Program, CA\$5 million in total, described on this page
- » ACIAR-IDRC Research Program on One Health (AIRPOH), CA\$4 million in total, described on page 24.



The Food Loss Research Program established by ACIAR and IDRC aims to gain a deeper understanding of the drivers of food loss, from the farm through to the consumer.



## Food loss program

The Food Loss Research Program aims to gain a deeper understanding of the drivers of food loss, from the farm through to the consumer. The program marks an important evolution in looking at food from a systems perspective. In some countries where ACIAR operates, there is a lack of post-harvest infrastructure for reducing food loss. While technology solutions exist, they have not been adopted or implemented at scale.

The Food Loss Research Program addresses value chain inefficiencies, poor communication systems and overall structural inequalities. Through 4 projects the program seeks to:

- » examine agricultural value chains within food systems at a provincial or local level in 2 or more countries in which ACIAR and/or IDRC work
- » conduct foresight exercises until 2050, stipulating how value chains are likely to change given trends in labour, technology, mechanisation, climate change, urban and rural density, and nutritional requirements
- » engage private agribusinesses along the value chain to document their experiences of food loss and explore models of innovation to mitigate food loss in the long term
- » assess interventions that are currently being used at a local scale across the value chain
- » assess factors that enable or prevent the transfer of intervention strategies from one location to another.

## Food Loss Research Program projects

- » Adopting a gender-inclusive participatory approach to reducing horticultural food loss in the Pacific (CS/2020/191) - page 59
- » Developing food loss reduction pathways through smart business practices in mango and tomato value chains in Pakistan and Sri Lanka (CS/2020/193) - page 133
- » Food loss in the catfish value chain of the Mekong River Basin (CS/2020/209) - page 80
- » Managing food value chains for improved nutrition for urban vulnerable populations in Africa (Africitiesfood) (CS/2020/210) - page 144





### One Health program

One Health is a framework that recognises that the health of people, animals and the environment is interconnected. It provides an approach for developing more effective integration across the human and animal health systems in regard to regulations, surveillance, diagnostics and responses to disease outbreaks.

Globally, approximately 75% of newly emerging infectious diseases are zoonoses (diseases that can transmit from animals to humans). These diseases arise as a result of one or several factors that may be anthropogenic, genetic, ecological, socioeconomic or climatic in origin. Across the Indo-Pacific region, animal production systems are changing rapidly; however, local and regional capacity to diagnose, treat and control disease is generally weak and under-resourced.

Jointly funded for A\$4.3 million, the ACIAR-IDRC Research Program on One Health (AIRPOH), will form a portfolio of interconnected projects supporting research that will have a transformative impact on human, animal and environmental health. The program aims to promote new ideas and thinking on One Health.

### Research Program on One Health projects

- » Timor-Leste: Developing strategies to reduce brucellosis transmission in Timor-Leste based on One Health collaboration (LS/2022/161) - page 107.
- » Policy support to the Philippines' national surveillance and control programs for African swine fever, avian influenza and antimicrobial resistance: A One Health systems approach to animal food security, public health resiliency and environment sustainability (LS/2022/162) - page 103.
- » Livestock enhancement through EcoHealth/One Health assessment in South-East Asia (LS/2022/163) - page 103.
- » The role of agricultural and forest landscapes on human and environmental health in Cambodia (SSS/2022/164) - page 82.

### Alliance for Agricultural Research and Development for Food Security

The Alliance for Agricultural Research and Development for Food Security (Alliance) is a joint initiative between ACIAR, the Syngenta Foundation for Sustainable Agriculture and the Crawford Fund.

Alliance partners undertake complementary activities and/or co-fund innovative approaches to research-for-development activities and delivery, using the unique and diverse strengths and expertise of the parties to better promote and achieve food security.

The Alliance recognised the potential for demand-led plant variety design to transform plant breeding for small-scale agriculture and food security. In 2014 it established the project 'Demand led plant variety design for emerging markets in Africa' (FSC/2013/019) (page 146), which engages with plant-breeding and university sectors in many countries in southern and eastern Africa.

A new project in Bangladesh has evolved from a shared interest between ACIAR and the Syngenta Foundation, of wanting to improve the translation of scientific information on soil health into practical and useable information to support farmers in their decision making. Ultimately, the project aims to improve the resilience, sustainability and productivity of smallholder farmers (page 124).



**Dr Julianne Biddle** is the Director, Multilateral Engagement at ACIAR. Julianne has over 20 years' experience in plant science, working in research, science communication, education, policy and management. She has a keen interest in conservation biology, plant-pathogen interactions, ecology and plant physiology. Before joining ACIAR, Julianne worked at the University of Queensland where she focused on demand-led plant breeding in Africa and coconut physiology. Julianne grew up on a cattle farm in central Queensland and has a Bachelor of Science with advanced studies in biochemistry, molecular biology, cell biology and biological sciences from Griffith University, Honours in biochemistry and molecular biology and a PhD in ecology, evolution and genetics from the Australian National University.

## Engagement in multilateral climate forums

**ACIAR drives innovative international agricultural research and development through our strong engagement in multilateral forums, demonstrating Australia's commitment to global action to achieve the Sustainable Development Goals.**

### Adaptation Research Alliance

ACIAR worked with more than 30 organisations around the world to scope and develop a new global research alliance, the Adaptation Research Alliance. Launched at COP26 (2021), the Adaptation Research Alliance is now a global alliance of over 120 organisations dedicated to results-oriented adaptation research, particularly research that is locally led, driven by local needs, to support action that benefits people on the ground.

The Alliance seeks to facilitate collective learning across its members to improve the ability of research to support faster and more ambitious climate response. As a founding member of the Alliance, ACIAR is supporting the Secretariat (ACIAR project CLIM/2022/108) to turn a literature review of the latest methods for large-scale collective learning (completed by the International Institute for Environment and Development) into a practical platform for Alliance members to learn and improve outcomes from research together.

### COP27

ACIAR will engage in events connected to the UN Conference of the Parties on Climate Change (COP27) in November 2022. The conference and associated events and dialogues aim to build on previous successes to define pathways and processes to effectively tackle the global challenge of climate change.

The endeavours of COP27 and the groups it brings together align with the objective of ACIAR, through its Climate Change Program, to progress the science and practice of how to transform food systems and livelihoods in our partner countries, to adapt to climate impacts and reduce greenhouse gas emissions.

At COP27, ACIAR will convene and participate in several pavilion sessions. One of these includes a panel session entitled 'Insights on implementation of food systems change in development'. In this session, ACIAR will share insights from our work on how food systems change can be practically implemented on the ground and invite discussion on others' experiences of barriers and enablers to food systems change.

### The Global Research Alliance on Agricultural Greenhouse Gases

The Global Research Alliance on Agricultural Greenhouse Gases (GRA) is an organisation bringing together 66 member countries and 24 partner organisations. ACIAR is Australia's representative on the GRA Council. The GRA aims to share knowledge and increase cooperation on addressing the significant challenge of meeting a dramatic increase in global food demand, while reducing the contribution of the agriculture sector to greenhouse gas emissions.

Members of the GRA work together to deepen and broaden mitigation research efforts across the agricultural sub-sectors of paddy rice, cropping and livestock, and to coordinate cross-cutting activities in these areas, including promoting synergies between adaptation and mitigation efforts.



ACIAR Research Program Manager, Climate Change, Dr Veronica Doerr, and ACIAR Pacific Region Manager, Mai Alagcan (centre), with members of the Samoa Farmers Association (including former John Allwright Fellow Philip Tuivavalagi who is also the Samoa Assistant FAO Representative - furthest on the right). The Samoa Farmers Association has been working with ACIAR on sustainable intensification of taro-based production systems in Samoa.