



# partners

IN RESEARCH FOR DEVELOPMENT

Creating  
'balanced  
scientists'

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*Partners in Research for Development* is the flagship publication of the Australian Centre for International Agricultural Research (ACIAR). *Partners* presents articles that summarise results from ACIAR-brokered research projects and puts ACIAR research initiatives into perspective. Technical enquiries will be passed on to the appropriate researchers for reply. Reprinting of articles, either whole or in part, is welcomed, provided that the source is acknowledged.

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ISSN 1839-616X (Online) 1031-1009 (Print)

Managing editor: Margo Marchbank

Copyeditor: Lorna Hendry

Graphic Design: Light Creative Pty Ltd

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**Front cover:** Department of Agricultural Research soil researcher Thuzar Win stands in a field in the MyPulses project near Phoe Lay Lone village in the Central Dry Zone region of Myanmar. In late 2018 Thuzar Win will move to Armidale and begin studying a Masters at UNE on an ACIAR-funded John Allwright Fellow scholarship.  
Credit: Conor Ashleigh

**Back cover:** Fish market at the old market Auki, the capital of Malaita province, Solomon Islands.  
Credit: Irene Scott/AusAID



## FROM THE CEO

### Professor Andrew Campbell

Before looking forward to some exciting projects and events we have planned for 2019, I would just like to revisit two events which took place at the end of 2018 and highlight our partnership model.

In late November, ACIAR hosted a well-attended forum, 'Transforming the global food system: challenges and opportunities' in Canberra. Given that less than one-third of the world's population eats a healthy diet, it was a wonderful opportunity to have the directors general of three CGIAR research institutes—Dr Martin Kropff of CIMMYT (maize and wheat research), Dr Jimmy Smith of ILRI (livestock) and Dr Matthew Morell of IRRI (rice) in Canberra—to address the agricultural research community on the work they are doing to meet this challenge.

In December, I was very pleased to sign a new agreement with the Executive Director of the Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (PCAARRD), Dr Reynaldo Eborá. This agreement marks a new stage in a very productive 35-year relationship between ACIAR and PCAARRD. We will continue to focus on collaborative research, with a new emphasis on capacity building in the Philippines. Read more about ACIAR and PCAARRD on pages 8–9.

This year began with our capacity building initiative, the John Allwright Fellowship executive leadership (JAFel) program, where JA fellows are undertaking a tailor-made intensive blended learning course aimed to foster the development of 'balanced scientists'. We had



feedback from partner countries that when fellows return home, the expectation is that they will assume leadership roles in agricultural research. Read more about the JAFel program on pages 4–7.

And last, but not least, I would like to draw your attention to our forthcoming conference, which will focus on gender and equality issues in agricultural research for development. 'Seeds of change' will be held at the University of Canberra from 2–4 April 2019. The next issue of *Partners* will cover gender in more detail, but if you would like further information, go to <http://bit.ly/ACIARseedsofchange>

## NEWS

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### Seeds of change conference April 2019

‘Seeds of change’ is an interdisciplinary conference for researchers and practitioners in all fields of agriculture, jointly funded by ACIAR, the CGIAR Collaborative Platform for Gender Research and the University of Canberra. The conference will open on 3 April with a keynote address by Professor Katherine Gibson of Western Sydney University. Professor Gibson is known internationally for her research on rethinking economies as sites of ethical action. She trained as a human geographer, has expertise in political economy and developed a distinctive approach to economic geography drawing on feminism, among other areas.

Professor Naila Kabeer, from the London School of Economics, will give a public lecture on the evening of 3 April. Professor Kabeer is interested in various aspects of inequality and how they play out within households, labour markets and the wider economy.

The conference has six themes:

- gender and equity for nutritious food systems
- gender and rural transformation
- closing the gender gap
- masculinities and changing rural economies
- labour and production relations
- gender in agri-food systems.

Sessions on these six themes will run concurrently throughout the conference.

<http://bit.ly/ACIARseedsofchange>

### 2018 Global Nutrition Report released

The fifth 2018 Global Nutrition Report was released in late November 2018. It reveals malnutrition is unacceptably high and affects every country in the world, but that there is also an unprecedented opportunity to end it.

The Global Nutrition Report provides a concrete overview of progress made and highlights solutions from around the globe. David Beasley, Executive Director, United Nations World Food Programme, says, ‘The information in the Global Nutrition Report goes far beyond facts and figures. What is really behind these tables and graphs are stories of potential: the potential of more babies seeing their first birthdays, of children achieving their potential in school, and of adults leading healthy and productive lives—all on the foundation of good nutrition. The information collected, analysed and shared in the Global Nutrition Report is never an end in itself, but a means that allows us to save lives, change lives and ensure that nobody is left behind.’

The report highlights that a third of reproductive-age women globally are anaemic, while 39% of the world’s adults are overweight or obese; and each year around 20 million babies are born underweight. It is estimated that malnutrition in all its forms could cost society up to US\$3.5 trillion per year, with overweight and obesity alone costing US\$500 billion per year. Corinna Hawkes, co-chair of the report, and Director of the Centre for Food Policy, says, ‘The figures call for immediate action. Malnutrition is responsible for more ill health than any other cause. The health consequences of overweight and obesity contribute to an estimated four million deaths, while undernutrition explains around 45% of deaths among children under five. The uncomfortable question is not so much “Why are things so bad?” but “Why are things not better when we know so much more than before?”’

[globalnutritionreport.org](http://globalnutritionreport.org)

## EVENTS FEBRUARY–JUNE 2019

- 
- 19–20**  
FEBRUARY
- AUSTRALASIAN AID CONFERENCE**  
Canberra, Australia  
The Australasian Aid Conference, held in partnership with The Asia Foundation, brings together aid and international development policy researchers from across Australia, the Pacific, Asia and beyond. Registration is now open.  
[devpolicy.crawford.anu.edu.au/annual-australasian-aid-conference/2019](http://devpolicy.crawford.anu.edu.au/annual-australasian-aid-conference/2019)
- 
- 5–6**  
MARCH
- ABARES OUTLOOK 2019 CONFERENCE**  
Canberra, Australia  
An annual event organised by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), Outlook is Australia's premier information and networking forum for the agriculture sector. [www.agriculture.gov.au/abares/outlook/](http://www.agriculture.gov.au/abares/outlook/)
- 
- 2–3**  
APRIL
- INSECTS AS FOOD AND FEED CONFERENCE**  
Royal Agricultural University, Cirencester, UK  
The conference will bring together key scientists, industry representatives, policy makers and early innovators from across the UK. The conference will also be streamed live on the internet. [www.royensoc.co.uk/meeting/entomophagy](http://www.royensoc.co.uk/meeting/entomophagy)
- 
- 2–4**  
APRIL
- SEEDS OF CHANGE CONFERENCE**  
Canberra, Australia  
Gender equality through agricultural research for development—an interdisciplinary conference for researchers and practitioners in all fields of agriculture.  
<https://bit.ly/SeedsOfChangeConf>
- 
- 20–22**  
MAY
- 4TH WORLD CONGRESS ON AGROFORESTRY**  
Montpellier, France  
The conference will focus on bridging the science–policy gap and progressing agroforestry science and practice. [agroforestry2019.cirad.fr/](http://agroforestry2019.cirad.fr/)
- 
- 12–13**  
JUNE
- AUSTRALIAN BIOSECURITY SYMPOSIUM**  
Gold Coast, Queensland  
The symposium will focus on preventative biosecurity practices, research and innovation. [www.biosym.com.au](http://www.biosym.com.au)
-

# Creating ‘balanced scientists’

**ACIAR has had an enduring focus on capacity building, but that focus is intensifying with several initiatives in 2019.**

Participants in the John Allwright Fellowship executive leadership (JAFel) program will undertake a tailor-made intensive blended learning course that aims to foster the development of what Eleanor Dean, ACIAR General Manager, Outreach and Capacity Building, describes as ‘balanced scientists’.

The new program, Dean says, ‘recognises feedback from senior people in our partner countries, who told us that the fellows were expected to have a broader range of skills’. Not only did they have to be accomplished scientists in their respective fields, but on their return to their home countries, they were expected to take up leadership positions.

‘We modelled the executive leadership program on some work done by the Centre for Invasive Species Solutions—they were the ones who coined the term “balanced researcher”. Following a review of our capacity building program in 2017, one of the recommendations was for a leadership course for fellows, so we put out a tender for the program.’

The University of New England (UNE) at Armidale in rural NSW has a long and successful record of delivering distance education and, as the successful tenderer, worked closely with ACIAR to tailor a suitable program. UNE Professor John Gibson is director of UNE’s Institute for Genetics and Bioinformatics. His livestock research activities, which include a variety of environmental, agricultural and social contexts ranging from developing world subsistence systems through to the intensive systems of the developed world, as well as his longstanding involvement with the Australia Awards (of which JAF is a part), make him

well-placed to lead the program. Gibson, along with Rebecca Spence, who has a background in development education, has shaped the new executive leadership program.

‘What we especially liked about the UNE proposal was the fact that the JAFel program would give participants credits towards a graduate certificate in leadership qualification,’ Dean says. The program’s balance of face-to-face and online study is also suited to the needs of widely dispersed JA fellows, who are studying at universities across Australia, as far apart as Western Australia and northern Queensland.

In January, 25 JA fellows will take part in the first element of the inaugural program—10 days of intensive face-to-face learning. Spence explains, ‘The first two days will focus on themes of “leading yourself, leading teams and leading

## KEY POINTS

- 1 A new ACIAR program aims to foster the development of ‘balanced scientists’: researchers who have a balance of technical and leadership skills.
- 2 Twenty-five John Allwright fellows begin the 18-month program in 2019.





The UNE Smart Farm Innovation Centre. Credit: UNE

organisations”, where participants will identify and explore their own leadership styles, and ask “what leadership skills would I like to emulate?”

The next two days will home in on practical aspects of best-practice research project management. ‘We wanted to have an emphasis on social inclusion and gender,’ Spence says, as well as broader cultural elements.

The 10 days in Armidale will also include field trips highlighting regional beef and horticultural innovation, as well as sessions on entrepreneurship.

By the end of this first element, the JA fellows will be asked to create their own leadership action plan, ensuring it is both relevant to their needs and practical—something they can implement. ‘It’s critical they can apply what they’re learning, either leading through their

PhDs, or more broadly, leading into the future,’ Spence says.

The second element of the program will comprise seven online modules, which fellows must complete over the following 15 months. These modules cover off similar topics to those already studied face-to-face, Spence says. ‘However, given the fact that they will all be going back to countries which face significant challenges around food insecurity, and ACIAR leadership in this area, I have added a module on food security, which is called “leadership under duress”.’

‘What we have tried to do as much as possible is to reference ACIAR’s work on gender and social inclusion, and help them realise that, as part of the ACIAR community, fellows have access to a rich network, not only of other JA fellows,

but also active researchers. There is a rich vein of knowledge around leadership in research projects, and leadership around gender, food security, poverty reduction, small-scale and intensive farming.'

Over the 15 months, there will be ongoing support for program participants, with chat forums, regular weekly catch-ups and surveys to gain feedback on the program.

The third element, Spence says, 'is fellows coming back at the end and telling us what they've learned'. In a four- or five-day workshop back at Armidale, participants will present their action plans and what they have learned from the program.

Dean says in designing the program, she had some initial concern about the study load for participants, given the academic demands of their masters and PhD study. However, the feedback has been very positive. 'They are excited to take up the opportunity, and I'm excited to see the first cohort go through,' she says.

Two of the JA fellows in the inaugural executive leadership course are Tin May Yu Aung from Myanmar and Daykin Harohau from Solomon Islands.

The road from her birthplace, the old royal capital Mandalay, to PhD study at UNE has been a long one for Tin May Yu Aung, or Yu, as she likes to be called. The fifteenth of 17 children, Aung finished high school in 1991 with a science specialisation. In Myanmar, students entering high school must choose either a science or arts stream, and this determines what tertiary institutions they can attend. Entrance scores for university vary according to gender: in the year Yu applied, entry to medicine or engineering required scores of 405 for male students and 420 for female applicants.

'I didn't know anything about agriculture when I applied to the Institute of Agriculture to study for my bachelor degree,' Aung says. 'I hadn't seen a paddy plant, even though rice is our staple food.' The prospect of joining Yezin Agricultural University's teaching staff after graduation was a strong motivation to become involved



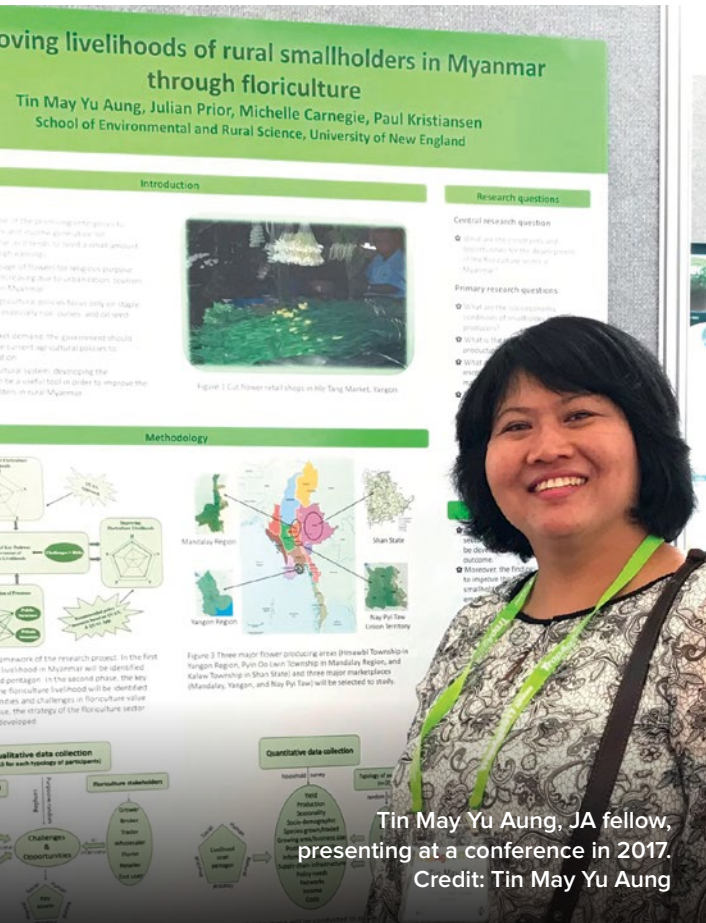
Eleanor Dean ACIAR General Manager,  
Outreach and Capacity Building  
Credit: Conor Ashleigh

in agricultural research for Aung. She lectured in horticulture and floriculture at the university, becoming involved in ACIAR Mylive project (ASEM-2011-043), until she came to Australia to further her study.

For Aung, being a JA fellow 'means everything'. Academically and culturally, she feels her horizons have broadened. With Australia's multicultural mix of students, 'I can learn about other cultures' traditions and customs, and I have the chance to be part of the amazing Australian academic culture that is so totally different to ours. My research capacity is growing because of the well-equipped learning environment, advanced technology and qualified supervisors and advisors at UNE.' Aung says she is looking forward to the executive leadership program to develop her skills in leadership, entrepreneurship and business, so that in turn she can foster these in future young leaders at Yezin Agricultural University on her return to Myanmar.







Tin May Yu Aung, JA fellow, presenting at a conference in 2017. Credit: Tin May Yu Aung



Daykin Harohau, JA fellow, interviews a tilapia farmer in Solomon Islands. Credit: Daykin Harohau

For Daykin Harohau, the executive leadership course will be an opportunity to build on what he describes as fairly fundamental management skills.

Harohau, the oldest of five children, lives in the province of Malaita in Solomon Islands. He has a longstanding passion for marine science, and completed his undergraduate degree in the subject at the University of the South Pacific in Fiji in 2010. Getting a job after graduation was not easy for Harohau, like many young Solomon Islanders. ‘Most of my friends couldn’t get the jobs they were trained for at university,’ he says, ‘but I was lucky’. After six months without work, he became a part-time research assistant with WorldFish in Honiara, working on a European Union–funded project on the economic valuation of coral reef ecosystem services in Solomon Islands.

In 2012, that became a full-time permanent position, including work on an ACIAR project on inland aquaculture in Solomon Islands.

One thing led to another, and in June 2016 he was awarded a JAF to begin his masters at James Cook University in northern Queensland on inland aquaculture in Solomon Islands, particularly the social aspects of tilapia farming. Stocking aquaculture ponds with tilapia gives rural Solomon Islanders greater dietary diversity, as well as potential income. He has now upgraded this research to a PhD.

Harohau is looking forward to the program in 2019–20 as the bulk of his leadership experience so far has been through trial and error on the job. He confesses that when he was thrown into managing a WorldFish project out in the field early on (and later managing an office of five staff), he had very little idea of what management was all about. He has since completed a one-week Crawford Fund leadership workshop, which was a ‘real eye-opener about the skills of management’, so the JAFel program will build on that foundation.

# A partnership of shared trust

## A revitalised ACIAR–PCAARRD relationship will have a strong focus on capacity building.

ACIAR CEO, Professor Andrew Campbell, and the acting Executive Director of the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD), Dr Reynaldo Eborá, signed a new partnership agreement between the two agencies in December 2018.

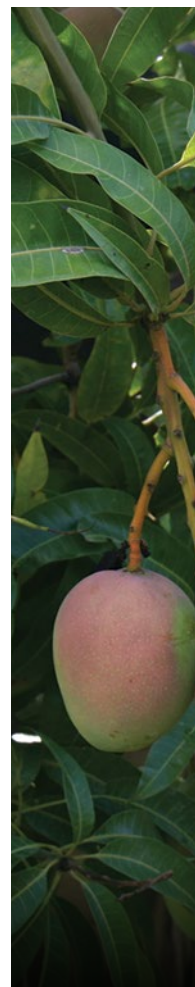
Speaking in Canberra after the signing, Dr Eborá said PCAARRD was motivated by a desire to build on the very productive 35-year relationship with ACIAR, and specifically, to focus on capacity building. PCAARRD was established in 1972; ACIAR followed not many years later, in 1982. In 1983, the two agencies signed a memorandum of understanding. Collaboration is very important to PCAARRD, Eborá said, because without active partnerships with state universities and colleges, and research and development institutes in the Philippines, as a funding agency PCAARRD may have ‘a good plan, but no implementing agencies’. Over 2017–18, PCAARRD is overseeing 379 ongoing projects, with a total funding of ₱1.3 billion (A\$34 million) from the Philippine government. PCAARRD has partnerships with agencies within the Philippines and internationally. ‘Our partnership with ACIAR is one of the most productive partnerships we have,’ he said. The two agencies have worked together on a number of projects focusing on livestock, forestry, water management and climate change. ‘Over 2017–18, PCAARRD is monitoring 11 ACIAR projects being implemented by our networks,’ he said. .

Dr Peter Horne, ACIAR General Manager, Country Programs, said the new partnership agreement recognised the changing relationship between ACIAR and PCAARRD, with both organisations being co-investors in the research collaboration between the two countries.

Collaborating in research, often with mutual benefits, and building capacity of agricultural research institutes in partner countries are key priorities for ACIAR. ‘With this new agreement, we want to work more closely as equal partners co-investing in research, capacity building and communicating about the partnerships in the Philippines’, Horne said.

Eborá said PCAARRD has some limitations in securing researchers to focus on issues critical to agriculture. ‘We don’t have enough researchers, and have difficulty in releasing people for higher study, due to their current teaching or administrative assignments.’ The number of people enrolling in agriculture at university has also declined, Eborá said. ‘Students are more inclined to take other courses, and those in agriculture are more inclined to take agricultural biotechnology or agricultural entrepreneurship, rather than the traditional agricultural disciplines. There are not enough plant pathologists and entomologists to meet the needs of industry and the research community.’

Recognising this, there is a strong appetite in the Philippines for encouraging and retaining scientific and technological expertise, as seen in the Balik (returning) Scientist Law enacted in June 2018. This strengthened the existing returning scientist program by giving expatriate Filipino scientists incentives to return home, such as exemption from licensing and permitting requirements, tax compensation, insurance, support for job opportunities for spouses and school admission for their children. The new law prioritises research fields such as agriculture, biotechnology, environment and natural resources, among others.







PCAARRD staff participating in an Australian study tour. Credit: ACIAR

## KEY POINTS

- 1 ACIAR and the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD) signed a new partnership agreement in December 2018.
- 2 ACIAR and PCAARRD have had a very productive 35-year relationship.

To address this issue through the new agreement, ACIAR and PCAARRD are exploring options for co-investing in graduate scholarships for students to undertake higher studies at Australian universities. Scholars will work on research topics aligned with PCAARRD-ACIAR-funded projects in the Philippines. The Philippines Department of Science and Technology (DOST) funds a standard scholarship program, and PCAARRD has secured several places for fully funded scholarships to Australian universities accredited by DOST. On their return from Australia after completing their graduate degrees, PCAARRD will provide them research grants, an initiative similar to its ongoing local graduate research and education assistance for technology (GREAT) program. Preferably, returning post-graduate scholars will enter the program on a project identified by PCAARRD which is co-funded by ACIAR and PCAARRD.

This scheme, Eborá said, will enable such researchers ‘to easily establish a track record, and be able to lead their sectors as soon as possible’.

PCAARRD is aware of some of the challenges that might arise, Eborá said, such as ensuring the research topics are relevant to the Philippines, and cultural differences in the way partners approach problems. However, he said the strength of the relationship between PCAARRD and ACIAR, where issues were discussed openly and honestly, would prevail, and any problems would be solved.

**MORE INFORMATION:** Philippine Council for Agriculture, Aquatic and Natural Resource Research and Development  
[www.pcaarrd.dost.gov.ph/home/portal](http://www.pcaarrd.dost.gov.ph/home/portal)



Dr Reynaldo Eborá (l) and Professor Andrew Campbell (r). Credit: Patrick Cape/ACIAR



# Getting a sweet return on mangoes

**A suite of five ACIAR small research activities (SRAs) is bringing together mango supply chain stakeholders and researchers from seven countries in a mango agribusiness program designed to understand the lucrative Chinese mango market and improve livelihoods for smallholder mango producers.**

Robin Roberts is a professor in agribusiness at Griffith University, and the mango agribusiness program project lead. Researchers from seven countries—Cambodia, Indonesia, Myanmar, the Philippines, Pakistan, Vietnam and Australia—are participating in five ACIAR small research activities. The project aims to:

- improve communication, collaboration and capacity development
- identify market development opportunities and implications in China
- identify research and development opportunities for entry of mangoes into Chinese markets
- evaluate opportunities for improving mango quality
- prioritise opportunities for processing mangoes in selected markets.

Roberts says the goal of the program is to engage Australian and partner country researchers in understanding the dynamic Chinese market and what is needed operationally for successful mango trade with China. The mango agribusiness program has cross-institutional and multidisciplinary teams working together to develop a common platform for mango quality, to understand the implications related to market entry and biosecurity in mango trade, to profile the breadth and depth of the market from an economic standpoint and to understand consumer mango demand. ‘It’s

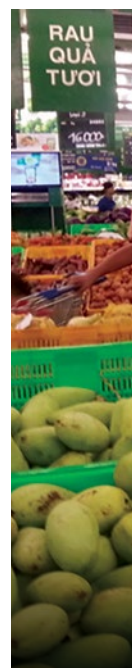
important information to share, especially with the technical people who are developing new varieties, to understand consumer and customer (retailer) preferences.’

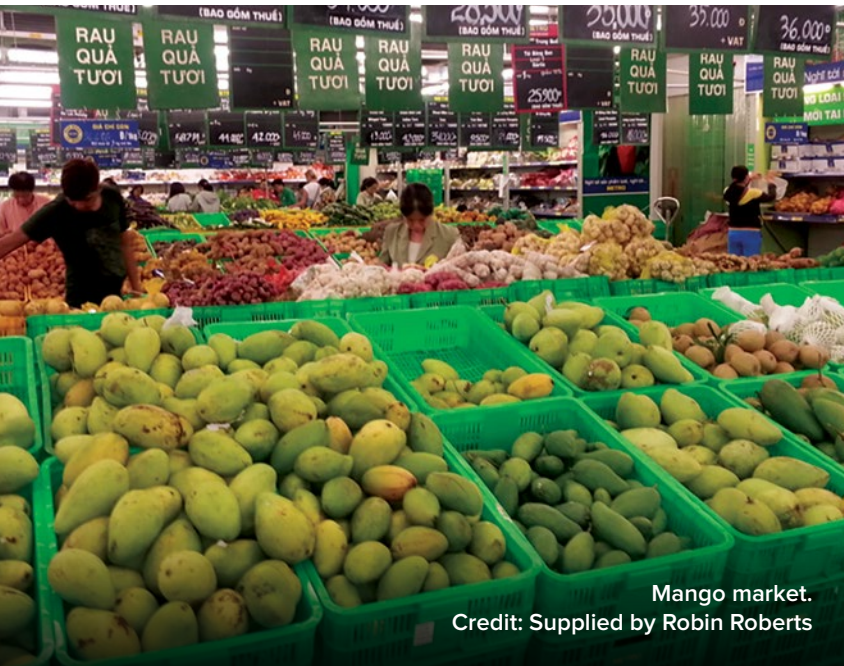
‘The mango research information is the umbrella project,’ Roberts says, ‘and the key to the success of the project as a whole.’ This project has three streams: communication, collaboration and capacity building. A new Asia-Pacific Mango Network website ([www.apmangonet.org](http://www.apmangonet.org)), Facebook page and a newsletter, *Simply Mango*, were created to provide a platform for researchers and industry to communicate program activities and share ideas.

‘With multiple researchers across a number of partner country institutions, including the Australian Mango Industry Association and national governments,’ Roberts says, ‘effective collaboration is essential. The first priority is developing a mango research network’.

## KEY POINTS

- 1 Researchers from seven countries are participating in the mango agribusiness program.
- 2 The final workshop for the program will be held in Haikou, China, on 19–21 March 2019.





Mango market.  
Credit: Supplied by Robin Roberts

The third and most significant component of the mango information project is capacity building. Eight early career researchers are participating across the program: two from the Philippines, Ivory Galang and Leizel Secretaria; two from Vietnam, Li Minh Hung and Tran Thi Ut Linh; and four from Australia, Samantha Frolov, Claire Settre, Yiru Chen and Colin Leung. These researchers are supported through one-on-one mentoring, as well as workshops held to develop research skills, such as the one on integrating gender in value-chain research held in Hanoi in November 2018.

Identifying the mangoes that people want to buy is the remit of the mango markets team. Researchers from the University of Adelaide and Griffith University undertook novel research in a willingness-to-pay study in partnership with a leading Shanghai supermarket chain, CitySuper, in October 2018. In 20 research sessions, consumers were given 'shopping money' to bid for mangoes in an auction. Initially, consumers 'bought with their eyes', choosing visually the biggest, reddest mangoes, but changed their preferences when they had more information about the mangoes, including where the mangoes were grown, and after tasting.

'You have to understand demand', Roberts says, not only of consumers, but also of customers/

retailers who have different requirements. 'Understanding the two touch points in a consumer's buying process is the key. The first touch point is visual—what the product looks like, its level of ripeness, how many to a box, the country of origin. The second touch point is in the tasting—offering a product that meets consumer expectations is challenging.'

While, Roberts says, on a policy level 'China is open for business', on a technical science level there are strict biosecurity protocols to be met. On behalf of Griffith University, Peter Johnson and his team are mapping these entry protocols into China to assist partners in meeting these. 'They are creating an overarching document which dovetails with "What do they want to buy?"' Roberts says. 'There's no point in having a produce protocol for a product into a country if consumers don't want to buy it.'

The mango agribusiness program partners will come together for a final workshop on 19–21 March 2019 in Haikou city, Hainan province, the home of the Chinese Academy of Tropical Agricultural Sciences and also a major Chinese mango-growing area. The teams will present their research, connecting the large number of research activities to understand the comparative and competitive positions for mango supply and demand into the Chinese market. 'Connecting the dots ... by evaluating the studies to form a clearer understanding of Chinese mango trade, will be a key outcome of the program,' Roberts says.

*Partners* will give an update on these projects in a future issue.

ACIAR PROJECT: Supporting access to mango research information, AGB/2016/006. Challenges and opportunities of China mango markets, AGB/2016/007. Biosecurity opportunities and strategies for selected mango markets, AGB/2016/008. Mango fruit quality, AGB/2016/009. Tropical fruit processing in selected mango markets, AGB/2016/010.

MORE INFORMATION: Asia-Pacific Mango Network ([www.apmangonet.org](http://www.apmangonet.org))

# Water management from the ground up

**An innovative project is giving villages in rural India control over vital groundwater management.**

The Bunnings hardware store chain, although a favourite of Australian gardeners and renovators, is not the sort of place you'd associate with a scheme to tackle one of the most pressing problems facing agriculture in the developing world.

But villages in rural India are using \$5 rain gauges bought from a western Sydney Bunnings store by Professor Basant Maheshwari as part of an innovative scheme to give them control over how their groundwater is managed.

Maheshwari leads the project, Managing Aquifer Recharge and Sustaining Groundwater Use through Village-level Intervention (MARVI), which has been running in two Indian states since 2012, supported by ACIAR.

'MARVI is about a village-level participatory approach for measuring groundwater levels and improving groundwater productivity,' he says. It focuses on two watersheds: the Meghraj watershed in the Aravalli district of Gujarat state; and the Dharta watershed in the Udaipur district of Rajasthan.

India depends on groundwater from wells, but this essential resource is being depleted by

population growth and unpredictable monsoon rains that are probably associated with climate change, he says.

'Sixty per cent of irrigation water and 80% of drinking water comes from groundwater,' Maheshwari says. 'With the expanding population, water demand has increased rapidly and the quality of the groundwater has become a problem. People are drilling deeper for their water and pumping up old water that in some cases is contaminated with fluoride, arsenic, or even uranium, in parts of northern India.'

'In rural communities, shortage of groundwater constrains food production, jeopardises farm incomes, catalyses increased urban migration and fractures community cohesion,' he says. Knock-on effects include reduced productivity and lowered quality of life for women and girls who have to spend more time carrying water, to increased costs of drilling and pumping what water there is.

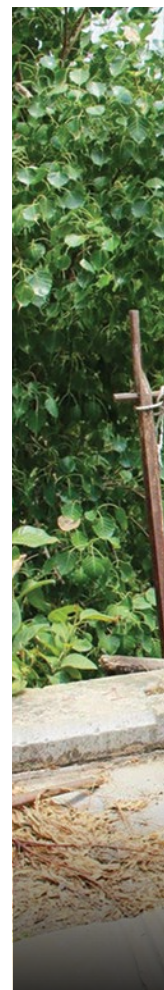
A foundation of MARVI is the engagement of local volunteers known as Bhujal Jankaars, Hindi words meaning 'groundwater informed'. Bhujal Jankaars monitor rainfall, groundwater levels and quality, and levels in check dams. They inform and guide village communities on the groundwater situation and how best to use groundwater in response to seasonal or long-term variability.

'Initially we wondered if people without a high level of education would be able to do scientific measurement, but to our surprise and delight they picked it up very quickly,' Maheshwari says.

'They have life experience. Their understanding comes from their own indigenous knowledge.'

## KEY POINTS

- 1 The groundwater project has been running in two Indian states since 2012, supported by ACIAR.
- 2 Local volunteers—Bhujal Jankaars—monitor rainfall, groundwater levels and quality, and advise villagers.







One of the Bhujal Jankaars measuring groundwater levels manually. Credit: B. Mesashwari

The Bhujal Jankaars faced a sceptical audience at first. ‘The farmers used to ask them, “What are you doing and why are you doing this?”’ Maheshwari says. But after several months the farmers were asking different questions. ‘It was “What is my water level, last week and three months ago?”. The conversation shifted further, to “What can I do?”’

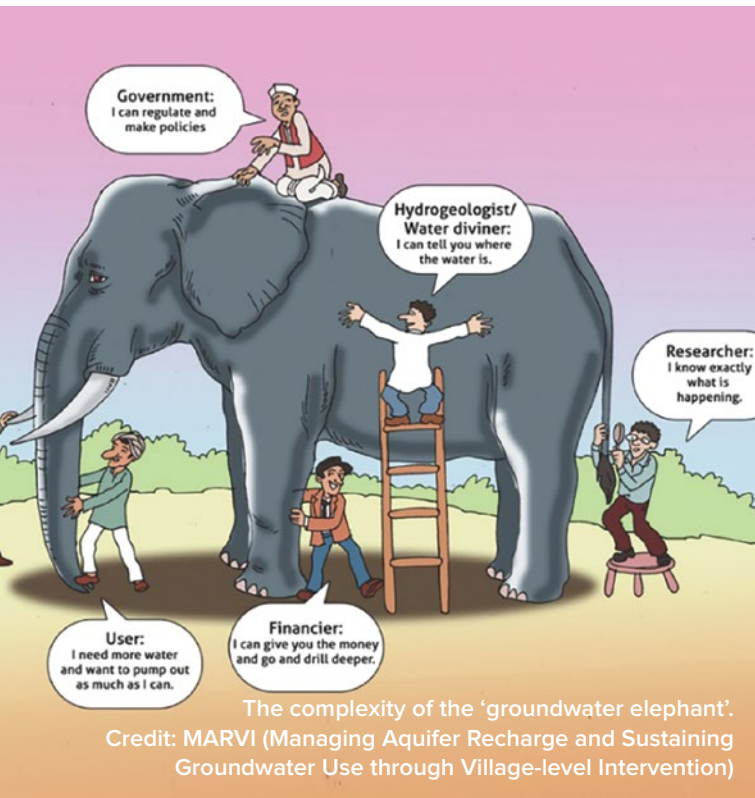
Bhujal Jankaars demonstrated ways to conserve water, such as mulching the soil, and substitute crops. ‘Wheat requires six irrigations,’ Maheshwari says, ‘but medicinal crops, such as isabgol (*Psyllium*) and kali tulasi (*Ocimum sanctum Linn.*) require only three irrigations, and the income per unit area is similar or better.’

Maheshwari believes the success of MARVI has clear lessons for other programs. ‘If you empower local people and engage with them, then they take ownership and they change things to work for them. If somebody from outside tells them what to do, that might work for a short while, but without that commitment it will fail. You have to trust people and you have to be with them. We went to the houses of the farm workers, we ate their food, we sat on their floors and we listened to them.’

And the Bunnings rain gauges? ‘They’re simple, just a tube. In each village there was one in the school and one with the Bhujal Jankaar. The gauges started a different type of conversation. Earlier, if you asked a farmer about the rainfall they would say, there was “not enough”, “enough”, or there was “runoff on the ground”. That was their indicator of the amount of rainfall. Now they are talking about the rainfall in millimetres.’

Maheshwari showed the rain gauge to the Indian government in New Delhi when he met with the joint secretary in charge of groundwater.

Now the government of India and the World Bank are launching a \$US1 billion groundwater management project in seven Indian states. ‘They are going to consider monitoring rain gauges and training Bhujal Jankaars,’ Maheshwari says. ‘MARVI has made a connection with this larger project to tackle India’s groundwater crisis.’



The complexity of the ‘groundwater elephant’.

Credit: MARVI (Managing Aquifer Recharge and Sustaining Groundwater Use through Village-level Intervention)

ACIAR PROJECT: Managing Aquifer Recharge and Sustaining Groundwater Use through Village-level Intervention (MARVI), LWR/2010/015.

# Ladders of success

**The diverse fish fauna of the Mekong River basin provides food, employment and income for millions of people, but its sustainability is threatened by barriers that block fish migration.**

In December 2018, Charles Sturt University in Albury, NSW, hosted a global conference on river connectivity, bringing together researchers on fish passage from all over the world. Fish Passage 2018 attracted more than 350 delegates, representing over 30 countries, to share knowledge on hydropower and fish management. At the conference, the ACIAR-funded project 'Fish passage research and development at low-head barriers in South-east Asia' was awarded the Distinguished Project Award.

A fish passage is a structure on or around artificial and natural barriers that facilitates the natural migration of fish. The fish passage built by the team in Pak Peung was designed in collaboration with the local community and is the first of its kind in Lao PDR. The team is led by Dr Lee Baumgartner from Charles Sturt University and key project partners are the National University of Laos, the Lao Living Aquatic Resources Research Center, the Lao Department of Irrigation and the Myanmar Department of Fisheries.

*Partners* spoke to Dr Lee Baumgartner about the fish passage work he has been leading on ACIAR's behalf for over 10 years.

'We started in 2006 with a proof of concept for ACIAR, and then from 2008–2014 there was the technical phase, where we did a lot of infield experiments, putting the fishway in place and gathering data about the technology,' Dr Baumgartner says. Now that fishways have been proven in Lao PDR, he is keen to see more structures in place across the Mekong basin.

The next phase of the project, which runs until 2020, focuses on quantifying the biophysical and community impacts of improved fish passage in Lao PDR and Myanmar. 'For a decade,' he says, 'we have been working with local villages, surveying people, seeing if their fish catches go up, and asking "Are they getting a better income?"', in an effort to quantify the benefits to livelihoods, the nutritional benefits, and that there is a cost benefit.'

ACIAR has a growing focus on making capacity building an integral part of all projects, and the fish passage work is no exception. 'We want to swing into the stage where we no longer have a role to play. Over the long term, we'd love to see Mekong countries developing and running their own fishway construction programs,' Baumgartner says.

With support from the Crawford Fund, a masterclass was held last year in Thailand at the Southeast Asian Fisheries Development Center. Sixty-five irrigation engineers and biologists, including 10 from each Mekong community, came together in the first regional-scale attempt to have biologists and engineers work collaboratively to come up with their own solution to fish passage. 'We had a team of world-class presenters and first-class students. The masterclass worked fantastically and each country walked away with a fishway

## KEY POINTS

- 1 ACIAR has funded an ongoing project in conjunction with Charles Sturt University to integrate fish passages in the Mekong basin.
- 2 The project is now in its scaling-out phase, seeking to expand the fishway passage work into other parts of South-East Asia.





The lower Mekong basin inland fisheries are the world's largest fisheries, with an estimated annual yield of 4.4 million tons, or an economic value of \$17 billion. More than 40 million people—two-thirds of the population of the lower Mekong basin—are actively involved in the sector.

Fisheries provide between 50–80% of the animal protein for the basin's population. They account for 18% of Cambodia's GDP and contribute more to the country's economy than rice production. In Lao PDR, the fisheries value is equivalent to nearly 13% of the country's GDP.

*Mekong River Commission*

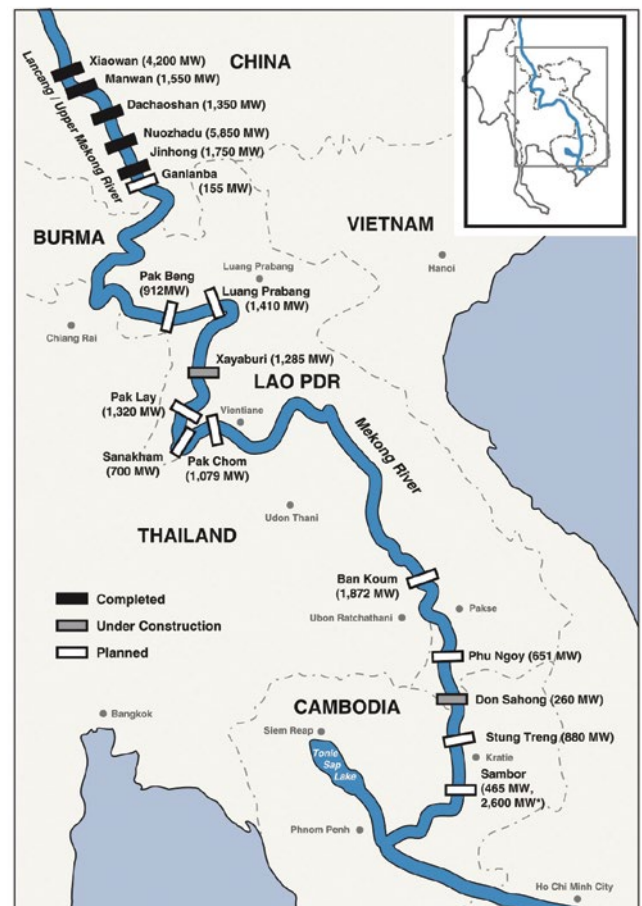
A Lao child watches the fishway catch.  
Credit: Jim Holmes

design. Since then there has been demand for more masterclasses,' Baumgartner says.

There are also moves underway to expand the fishway passage work into the policy and capacity building arena, especially in Cambodia, Laos and Indonesia, where ACIAR and the US Agency for International Development are co-funding scaling out.

One of the key themes emerging from the Fish Passage 2018 conference was the importance of the Mekong River system for the peoples of the basin, especially Myanmar, Laos, Thailand, Cambodia and Vietnam. Several speakers, such as Professor Ian Cowx from the University of Hull, voiced concern about the impact of major hydropower dams on this river system. Eleven mainstream dams are planned and several are underway. ACIAR is now involved in research to determine if the significant investment in fishways at the new dam sites is working to sustain the fisheries over the long term—a question of significant interest to developers and natural resource managers across the region.

Dams, completed and planned on the Mekong River as at June 2017. Mekong River Commission environmental report and International Rivers





# Innovative idea flies

**ACIAR has expanded a successful \$40 million research partnership co-funded with the Canadian International Development Research Centre called Cultivate Africa's Future. Improving sanitation in slums and food security for local villagers, it uses minimal water and land while producing green energy.**

## INSECTS FOR FEED

The opening scenes of the futuristic sci-fi film *Blade Runner 2049* show a replicant protein farmer tending to his insect larvae 'livestock'. That vision of farming in the year 2049 is happening today, although admittedly minus the android farmer.

ACIAR and Canadian partners, the International Development Research Centre (IDRC), have been funding an innovative project in Africa that uses insects for livestock feed. The two agencies have partnered with Africa's leading insect research institute, the International Centre of Insect Physiology and Ecology (*icipe*), Kenyan and Ugandan universities, and private sector sanitation and feed companies. The project seeks to realise the potential for insects to strengthen food security, provide employment and improve health and sanitation for people in Kenya and Uganda.

The 'Integrating insects in poultry and fish feed in Kenya and Uganda' (Insfeed) project, which began in 2015 and was renewed in 2018, creates a perfect closed loop. In Kenya's capital Nairobi, for example, sanitation is both a health and an environmental issue. Sixty per cent of Nairobi's residents do not have access to sewerage sanitation, and 66% of the city's waste is discharged into waterways and fields. Sanergy Ltd, a sanitation company based in Kenya, trains 'Fresh Life' franchisees and provides them with dry cassette toilets, which they set up through the poorer areas of the city. With these portable,

regularly cleaned toilets, residents of Mukuru and other districts have a much safer, cleaner and competitive alternative to the public toilets in these areas. The dry waste from these toilets is collected daily and used to raise black soldier flies (*Hermetia illucens*). The larvae gain weight rapidly on the waste substrate. The larvae are then steamed to remove any potential pathogens, solar-dried and made into a high-protein meal for use in fish and poultry feed.

According to the 2017 Insfeed project report, in many sub-Saharan countries, the poultry and fish industries are among the fastest-growing agribusinesses. Women account for over 60% of these producers. Traditionally, these fish and poultry farmers feed their stock a meal that uses soybean and fishmeal as its protein source. However, because of demand, particularly for fishmeal, prices are becoming prohibitive. Its cost represents 70% of the ingredients used in fish production. There are also issues with the sustainability of using fish for fishmeal, in direct competition with fish for human food.

The project reared 16 insect species, including black soldier flies (BSF), crickets, locusts, silkworm and American cockroaches. Of these, researchers selected four species for further study: BSF, two species of cricket, and silkworms. However, business development focused on the BSF because of its rapid growth, waste-management potential and low cost to produce. The BSF is also high in macro- and micro-nutrients, and has a higher crude protein level (49.5%) than the crude



*Scapsipedus icipe*, the newly-discovered edible cricket species. Credit: icipe

protein level of fishmeal that researchers sourced on the Kenyan and Ugandan markets (40.3%). The results of the BSF trial were very successful. Layer chickens fed the BSF larvae performed particularly well compared to those fed the conventional fishmeal mix, laying more and better quality eggs for a longer time.

'A major achievement of stage one,' Dr Segenet Kelemu, Director General of *icipe* says, 'is that Uganda and Kenya now have agreed standards for using insects as feed for chicken and fish.'

Stage one of the project concluded in 2017. It was so successful that the project has now been extended into stage two. This will involve scaling the project out to commercial production, to build business on the ground and create job opportunities in feed and poultry production, as well as in waste management. There is also scope to include countries beyond Kenya and Uganda.

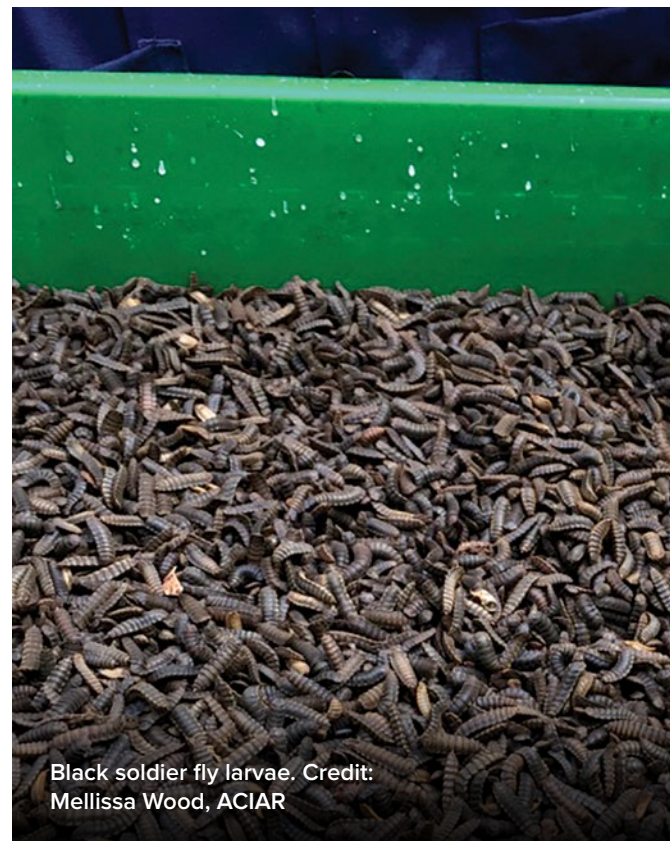
## KEY POINTS

- 1 ACIAR and the Canadian International Development Research Centre are working with the International Centre of Insect Physiology and Ecology, Kenyan and Ugandan universities, and private sector sanitation and feed companies.
- 2 The innovative 'Integrating insects in poultry and fish feed in Kenya and Uganda' project began in 2015 and was renewed in 2018.





Samson Owino, waste management operator, collects waste in Mukuru, Nairobi. Credit: Sanergy



Black soldier fly larvae. Credit: Mellissa Wood, ACIAR

Kelemu says that all *icipe*'s major projects include an examination of their social and gender implications from the beginning, to ensure there are no obstacles at the scaling phase. 'Just because a new technology or product is good, does not mean it will be adopted by different sectors of society—you must consider the social agenda. That's why we have a very strong social science unit to discover whether there are any restrictions on adoption and, if there are, find out how we can resolve them.'

## INSECTS FOR FOOD

Farming insects as feed for livestock is only one part of the story. The other is the potential for raising edible insects as human food. The Food and Agricultural Organization has registered some 1900 edible insect species globally, and there is growing interest around the world in edible insects as food for human consumption. In Europe and North America, Kelemu says, 'high-class restaurants are specialising in

insects'. The Italian-based website L'Entomofago ([www.entomofago.eu](http://www.entomofago.eu)), for example, capitalises on this growing interest, promoting itself as the site for the 'first specialised information media on edible insects as food and feed'.

*Partners* talked to Dr Kelemu about the work *icipe* is doing in this area. Kelemu says *icipe* has been working on an inventory of edible insects across Africa for the past five years and has identified over 500 edible African species. 'We are working on the nutritional profile of insects Africans have been consuming for many generations.' She explains that women and children collect these insects in the forests, but they can only be found at certain times of the year. *Icipe* is looking at cheap substrates and technologies that can be used to mass-rear them and make them available all year round.

'With the global population expected to increase significantly in the next 50 years, we have to change the way we rear our animals and get our protein,' Kelemu says. 'A number of insects are loaded with a significant amount





Black soldier fly *Hermetia illucens*.  
Credit: Didier Descouens

of protein, much higher than in fish or beef, or other protein sources we consume.’ Not only is this protein present in some insects in significant amounts, but it is also of a high quality, containing essential limiting amino acids such as lysine and tryptophan. A number of edible insects also contain high levels of minerals, vitamins and antioxidants.

Kelemu says she is very excited by the possibilities rearing insects can bring. ‘You can rear insects rapidly on waste—their conversion rate is much higher than any other animals.’ Insect farming also brings environmental benefits. ‘Their environmental footprint is much smaller—for one thing, you can rear insects with little or no water,’ she says. Traditionally, women and children have been the insect gatherers, a time-consuming task, and have not been necessarily discriminating in the species they collect. Farming insects commercially, Kelemu says, can alleviate the workload for the women and children, as well as protecting the beneficial insects they might collect.

*icipe* is currently exploring the oil content of various edible African insects with a view to commercialisation, along with ongoing work on insects for human and animal nutrition.

Postscript: Shortly after *Partners* interviewed Dr Kelemu, *icipe* announced the discovery of a new species of edible insect. The media release says: ‘Researchers at the International Centre of Insect Physiology and Ecology (*icipe*) in Nairobi, Kenya, have discovered a new, previously undescribed edible cricket with great promise for mass production for human consumption and inclusion as an alternative protein ingredient in animal feeds. The species, which was collected and reared for experimental purposes at the Centre’s campus, has been named *Scapsipedus icipe Hugel & Tanga nov. sp.*’

ACIAR/IDRC CultiAF project: Integrating insects in poultry and fish feed in Kenya and Uganda. IDRC project number: 107839



# Developing biosecurity capacity

**Capacity building is core to ACIAR work across the Indo-Pacific region.**

According to the Centre for Agriculture and Biosciences International (CABI), millions of the world's most vulnerable people face problems with invasive weeds, insects and plant diseases, which have a major impact on global prosperity, communities and the environment. Developing countries are disproportionately affected. The global cost of the world's 1.2 million invasive species is estimated at \$1.4 trillion per year—close to 5% of global gross domestic product.

The Australia–Africa Plant Biosecurity Partnership was conceived and funded by ACIAR to build African biosecurity capacity, and ran from 2014 to 2017. Following a year of consultation across Africa, poor biosecurity control capacity was identified as a significant obstacle to trade in agricultural products, limiting farmers' income and food security. ACIAR determined to leverage Australia's world-class strength, experience and comparative advantage in biosecurity to build and strengthen African capacity to address plant biosecurity problems.

Bill Magee, formerly with the Australian Quarantine and Inspection Service, was the project leader (Australia) on the ACIAR-funded Australia–Africa Plant Biosecurity consortium, which also comprised the Plant Biosecurity Cooperative Research Centre, the Crawford Fund and CABI. The brief was 'to develop a series of training programs for mid-level regulatory officials and private sector specialists working in biosecurity in southern and eastern Africa—leading to a regional network of specialists to promote biosecurity in the region'.

The training program was designed to improve food security and prosperity in the region by improving crop production and opening up export markets. It comprised five main elements: a specific placement in supporting Australian institutions; communication and advocacy training; a market access simulation; the establishment of ongoing mentoring relationships; and creation of the Africa Plant Biosecurity network. Forty-five people trained in the inaugural program: 15 fellows who were matched with institutions in Australia to research a particular problem they had nominated for their country, and a further 30 associate fellows who received training in Africa.

Dr Roger Day from CABI was the project leader (Africa). He coordinated training workshops in Africa and managed the crucial relationships with the national plant protection organisations involved in the program. Fruit flies, seed-borne disease and diseases of African staples such as maize and bananas were among the focus problems fellows chose. Others looked at issues such as drafting biosecurity regulation and the phytosanitary implications of gaining market access for particular crops.

Magee says the African program informed their thinking about the Pacific program. 'There was lots of training on communication, advocacy and representation run by the Crawford Fund and Econnect', including a week-long course in Perth. 'People working in plant quarantine are generally biologists. Advocacy, or going to a politician and saying, "We need to get market access" doesn't come naturally [to them], so



Female oriental fruit fly—*bactrocera dorsalis*—laying eggs in papaya. Credit: Scott Bauer

they tend to get left out of trade negotiations. An African nation may be having negotiations with the European Union (EU), for example, and they will have trade people there, but no-one from plant biosecurity. “They’re scientists, what will they bring?” But the EU is worried about fruit flies, and the plant biosecurity people are actually the ones who might be able to satisfy the EU that there’s a way of managing fruit flies, and then they’ll set up a trade protocol,’ Magee says. The course also gave participants practice in media interviews, fielding real journalists’ questions, as well as developing their written communication skills so that they could ‘take a technical issue and package it in a way that is accessible for trade officials’.

The other valuable innovation was a one-week simulation exercise, run by an Australian

## KEY POINTS

- 1 Developing biosecurity capacity is a vital part of protecting the agricultural economies of Australia and developing countries.
- 2 Following the success of the Australia–Africa Plant Biosecurity Partnership, ACIAR is developing new biosecurity capacity building partnerships in Pacific island countries.





Fusarium wilt-affected banana plant. Credit: Scot Nelson



company, BSASP Pty Ltd, where participants role-played gaining access into a new market. ‘The course has been run in Pakistan and in other countries,’ Magee says, ‘and there has been great feedback from participants. We put people into groups, representing different countries, and they have to prepare a dossier about why a country should take their tomatoes, for example. Other groups have to prepare a dossier for a different product, say dried tomato seeds.’ Groups need to identify the science around what diseases and pests are in these products, but it’s also about negotiation. ‘It’s what I did for a job, and it replicates it exactly.’

The legacy of the Australia–Africa Plant Biosecurity Partnership is a growing network of biosecurity people in Africa, with representatives from 10 African nations: Burundi, Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania, Uganda, Zambia and Zimbabwe. To foster the network’s growth and maintain the partnership’s momentum, ACIAR is funding a coordinator

based in Zambia, Dr Getachew Belay from the Common Market for Eastern and Southern Africa (COMESA). That organisation is described as a ‘regional economic community’, but there is a growing recognition that successful trade relies on effective biosecurity. The ACIAR funding is for 12 months, after which COMESA will take over the funding.

Belay is a biotechnologist who had considerable cereal research experience at the Ethiopian Institute of Agricultural Research before joining COMESA in 2010. ‘The whole idea,’ he says ‘is how to sustain what was achieved with the program, and continue network activities in the future. The network has been actively participating in fall armyworm control initiatives, such as the one by the African Union Commission and the Food and Agriculture Organization, through knowledge and information sharing, and development of joint pest risk analysis and mitigation measures. To keep the network active, there are also



The 2017 Pacific biosecurity workshop.  
Credit: ACIAR/Kalang Consulting

plans to support biosecurity activities by individual members in their home countries, through funding a competitive proposal submission process.

COMESA also has an annual regional meeting, with the next one scheduled for 19 March 2019. This is an opportunity, Belay says, for the network to make recommendations through a technical working group, channelling their expertise back into the system. 'We'll also have to look for other potential sources of funding,' he explains, 'to incentivise biosecurity network members to be actively engaged—resourcing is an ongoing issue.' After COMESA takes over funding, he hopes that support will still come from Australia, especially for short-term training, scholarships and specific African biosecurity programs.

The feedback from Africa is that extraordinary changes are already being recorded. The majority of fellows have already applied their new knowledge, increased collaboration with

other organisations within and external to their own country, and 89% of senior fellows had secured additional resources to apply the knowledge and skills gained. Further, 55% of senior fellows had already been given new responsibilities or been promoted.

Following this success, the focus will shift to the Pacific in 2019 and 2020, where a program will be run initially in eight Pacific island countries: Fiji, Kiribati, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

Building on the lessons learned from the African biosecurity program, work is well underway in the Pacific region. At a workshop held in June 2017, participants agreed that a biosecurity capacity building program for the Pacific region was vital to meet the challenges of major new threats, such as the giant African snail, the coconut rhino beetle and coffee berry borer, as well as maintaining biosecurity levels for existing commodity exports.

Magee says that ACIAR will work closely with New Zealand on this program. 'They have traditionally been active and successful in Pacific capacity building, so we've been talking to NZ biosecurity authorities about partnering—the NZ Ministry of Primary Industries, Foreign Affairs and Trade, and Plant and Food Research. They would host some of the Pacific islander fellows in their institutions, for example. New Zealand runs a very good biosecurity system—it's very efficient and very innovative.'

ACIAR is commissioning Kalang Consulting, Pacific biosecurity specialists, to work on the program. The next milestone will be the nomination of potential candidates by the various countries, and the selection of fellows. It is anticipated that the fellows will attend institutions in Australia and New Zealand for their five-week placements in April–May 2019. Later in 2019, Magee says, similar to the African program, there will be training for associate fellows in their home countries.

ACIAR PROJECT: The Australia–Africa Plant Biosecurity Partnership, C2013/079.



# Improving agricultural production

*Partners* profiles two young researchers, Dr Romana Roschinsky and Dr Brendan Brown, who are applying their agricultural research to improve livestock and crop production.

## DR ROMANA ROSCHINSKY

Many of us remember places where our lives changed course. Romana Roschinsky's place of destiny was the lush irrigated grass of a dairy farm near Deniliquin, in western NSW. Here, in her gap year between school and higher education, the bright 18-year-old daughter of a nurse and a mechanic from Vienna, Austria, discovered her intellectual passion for livestock production.

'I had six months in Australia and for half of the time I was on a dairy farm near Deniliquin,' she remembers.

Now 25, she says farming on the broad paddocks of Australia intrigued her in a way that the picturesque meadows of her homeland never quite managed to.

She returned to Vienna and enrolled at the University of Natural Resources and Life Sciences (BOKU). There her passion evolved into a focus on tropical and subtropical agriculture. A master's and PhD followed.

For Roschinsky, small improvements in livestock production are an effective way to improve the world.

'When you improve livestock systems you improve people's lives,' she says. 'Smallholder farms are the backbone of food security in many countries, and contributing to making them better is something I feel passionate about. Agriculture is something that takes place almost everywhere, and people will always need to eat.'

Livestock production is 'the intersection of culture and food production,' Roschinsky says. 'For a lot of farmers, there is an emotional component, and it's also often central to people's lives, culture and identities.'

And it's a gendered system. 'For a lot of women in developing countries, small livestock—poultry, sheep and goats—are their main source of income. With small livestock, the income goes directly to them.'

Roschinsky's home is now Armidale, NSW, where she is International Research and Training Leader—Livestock Systems in the University of New England's School of Environmental and Rural Science. Despite her rural vocation, part of her remains Viennese. Armidale's international community and schedule of cultural and scientific events, which intersect at Science at the Pub talks, give it the cosmopolitan feel she needs. 'We have to get used to it being a smaller place, but I really like it. Although you just don't build houses the way we do in Europe, so I feel the cold here as much as anyone!'

## DR BRENDAN BROWN

Not too many years ago, a school careers counsellor laid out three career options for Brendan Brown. The almost perpetually barefoot farm boy from the NSW south coast would become either a nurse, a ship's captain or an agricultural scientist.

Brown, 30, reckons his career has had elements of all three: the fascination of a scientist, the responsibility of a captain and the vocation of a nurse. 'I enjoy taking on leadership roles and I have had plenty of opportunities to "steer the ship" in my career so far,' he says.

He began as a scientist with a first-class honours BSc in agriculture in 2010, and his first professional role with ACIAR came the following year. But for his PhD in socially inclusive agricultural development, he looked to blend the physical and social sciences in an





Dr Romana Roschinsky. Photo supplied.



Dr Brendan Brown. Photo supplied.

attempt to connect research breakthroughs with the realities of farming in the developing world.

‘There are so many interventions that can be impactful—but we need to spend more time listening and less time lecturing,’ he says. ‘We must remember that we are here to help farmers strengthen their own livelihoods, not impose on them.’

This insight came from a backpacking trip as a student from Cape Town to Cairo, 10 years ago. As an agricultural volunteer, he saw the difficulties farmers face in sub-Saharan Africa.

‘Spend enough time driving through eastern Africa and you’ll notice huge diversity in what crops look like,’ he says. ‘Why is it that some maize is tall with large cobs, while others are limp and browning? Knowing what can be done on research stations and by large commercial farmers, why is there such disparity? This is what hit me when I backpacked through Africa as a 21-year-old.’

His career has allowed him opportunities for personal growth exploring the world, while also helping solve the problems of food production. Its latest phase has brought him to Nepal as a

Research Fellow with the International Maize and Wheat Research Improvement Centre (CIMMYT).

‘Coming from the semi-arid, dry land farming systems that dominate eastern and southern Africa, I’m struck by the potential for agricultural intensification in South Asia,’ he says. ‘The potential for mechanisation is also growing, which makes it a fascinating, yet complex, place to work.’

## KEY POINTS

- 1 Romana Roschinsky and Brendan Brown are young researchers who share a passion for applying their research to improve people’s livelihoods.
- 2 They use their expertise to assist in the challenges facing agriculture, such as improving livestock systems and crop production.



## REGIONAL ROUND UP

### Agriculture minister supports conservation agriculture scaling out

*Dr Apurba Chowdhury, UBKV, and Dr Pratibha Singh, ACIAR regional manager*

The sustainable and resilient farming system intensification (SRFSI) project team in West Bengal has received full support from the state's agriculture minister and senior officials to scale out conservation agriculture and sustainable intensification (CASI) approaches throughout the state. At a meeting in Kolkata in 2018, the project team presented their results and the challenges still remaining in scaling CASI to more farmers. As well as raising awareness of the project, the meeting aimed to provide initial training within the Department of Agriculture.

Mr Pradip Majumder, the advisor to the Honourable Chief Minister for Agriculture and Allied Sectors in West Bengal, had previously visited SRFSI project field sites to observe results and interact with farmers and local entrepreneurs. He shared his experiences, highlighting the benefits for women farmers and describing their involvement in raising nursery seedlings of rice and post-harvest processing of different crops. He praised the role of the North Bengal Agriculture University (UBKV) and the Department of Agriculture in taking the lead in 'bringing smiles to the farmers practising CASI technologies', saying that the success of the project was beyond expectations.

Dr Ashish Banerjee, the Minister for Agriculture, said he appreciated the efforts made by UBKV and the Department of Agriculture to date in scaling out CASI technologies, and pledged his full support for encouraging the adoption of CASI technologies in other parts of West Bengal. He also expressed support for making the necessary policy changes, and requested that a policy document be prepared for wider adoption of CASI technologies in the state.

The meeting was also attended by a raft of senior officials from the West Bengal government, including Dr Sampad Ranjan Patra, Director and ex officio Secretary for Agriculture; Atanu Dutta Majumder, Officer on Special Duty and Additional Director of Agriculture; Hrishikesh Mudi, Joint Secretary for Agriculture; Rajesh Singh, Joint Director of Extension; and Sajal Ghosh, Joint Director of Planning. The project team was supported by Dr C. Chattopadhyay, Vice Chancellor of UBKV and Dr A. Choudhury, Director of Research for UBKV, as well as Dr Pratibha Singh, ACIAR Regional Manager.

Later, there was an orientation training program for all district heads and assistant directors of agriculture. The proposed plan for scaling out recommended CASI technologies under the SRFSI project has prioritised 16 blocks in four districts of West Bengal, including Cooch Behar, Alipurduar, Malda and Dakshin Dinajpur.

For more information, please contact Dr TP Tiwari (T.Tiwari@cgiar.org).



West Bengal's Agriculture Minister showcasing CASI technology. Credit: ACIAR

## Inaugural *Ignite Alumni* forum in Africa

*Alis Okonji, ACIAR communications officer—Africa*

ACIAR African scholarships alumni convened in Nairobi on 3–5 December 2018 for the inaugural *Ignite Alumni* forum. The forum seeks to develop a network to reinforce and sustain informal and formal collaborations between alumni, projects, countries and Australia. The nine fellows from Kenya, Ethiopia, Uganda, Mozambique, Malawi and South Africa were all beneficiaries of John Dillon or John Allwright scholarships between 2000 and 2018.

Six Australia Awards Scholarship alumni were also invited to the *Ignite Alumni* forum in collaboration with the Australian High Commission in Nairobi.

As part of the program, ACIAR offered a workshop on ‘Communicating with non-technical audiences for policy influence’, developed and delivered by the International Service for the Acquisition of Agri-biotech Applications AfriCenter. Participants also explored formation of a networking platform to cascade the effort in their own countries.

The Australian Deputy High Commissioner to Kenya, Jonathan Ball, opened the forum, saying, ‘Research is important for everyone; whether carried out by the smallest holding farmer or a PhD scientist working in a research centre. The big challenge is often convincing policymakers and smallholder farmers that the research findings offer the best solution to their problems.’

The alumni, most working directly with ACIAR projects, shared their experiences, opportunities and challenges in upscaling their projects for greater impact. Through this forum and networking with fellow scholarship winners, it is hoped alumni will have greater confidence and expertise in communicating the benefits



*Ignite alumni at Stuart Barden's farm. Credit: ACIAR*



*ACIAR alumni and staff. Credit: ACIAR*

of their research to policymakers, whether through formal presentations or two-minute ‘elevator’ conversations.

Wilson De Sousa from Mozambique, who works with the ACIAR ‘Transforming irrigation in Southern Africa (TISA)’ project, described the Chameleon water monitoring device that is an integral part of the TISA project and explained his challenges in sharing this technology with policymakers.

During the forum, alumni also had the opportunity to visit Australian farmer, Stuart Barden, who practises no-till farming at Athi River, two hours from Nairobi. Burden has turned his 3000-acre piece of dry land into a productive farm of mung beans and chickpeas.



In November 2018, ACIAR took the rare opportunity of three CGIAR directors-general being in Australia at the same time to host the ‘Transforming global food systems’ forum in Canberra.

Dr Martin Kropff, director general of the International Maize and Wheat Improvement Center (CIMMYT), Dr Jimmy Smith, director general of the International Livestock Research Institute, and Dr Matthew Morell, director general of the International Rice Research Institute (IRRI) addressed the well-attended forum.

Regional roundup is a new section for *Partners*, designed to highlight major activities in ACIAR’s country offices. *Partners* welcomes contributions: please email [partners@aciar.gov.au](mailto:partners@aciar.gov.au) with ‘Attention: *Partners*’ managing editor’ as the subject.

## Transforming global food systems forum

Kropff outlined the global work CIMMYT, which has 1400 people in over 50 countries, is doing in developing high-yielding, high-nutrition and stress tolerant varieties of maize and wheat. ‘Over 50% of wheat and maize grown in the developing world comes from CIMMYT varieties,’ he said.

Smith discussed several themes: food and nutritional security, livelihoods, health and environment, and the key role livestock plays in these.

Morell outlined IRRI’s work in increasing the number of high-yielding rice varieties, and how it is meeting the challenges of climate change through development of drought- and salt-resistant varieties. ‘Rice,’ he told the forum, ‘is the fastest growing crop in sub-Saharan Africa.’

The half-day forum concluded with a panel, where speakers fielded questions from the floor, on topics such as research funding, water policy and management, and the challenges of delivering research into rapidly changing communities.



The forum panel, from L to R: Dr Martin Kropff, Dr Roslyn Prinsley, Dr Jimmy Smith, Caroline Rhodes, Dr Matthew Morell (obscured), and Dr Gabrielle Persley. Credit: ACIAR

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