

# Raising the living standards of Indonesian farm families

To mark ACIAR's 25 years in Indonesia, journalists have visited ACIAR-funded projects in Java. Among them was ABC rural reporter **Sarina Locke\***, who tells in her own words of her journey through Indonesia and of a side trip to West Timor with her mother, Dr Russ Locke, a scientist once involved in an Australian-funded aid project



Citrus grower Pak Budi (left) with Pekutan village secretary Ahmad Junaedi. In 35 years of farming citrus Pak Budi has pulled and replanted trees three times because of citrus greening disease. He is now working with ACIAR researchers in Indonesia to find better controls for the psyllid insects that cause the disease.

PHOTO: ADI RACHMATULLAH



\*Sarina Locke is ABC Rural reporter for the ACT and NSW Southern Tablelands. She travelled to Indonesia with the assistance of the not-for-profit Crawford Fund, which promotes international agricultural research and development.

**O**n first impression Java is highly fertile. It has an abundance of food growing quickly in rich volcanic soils during the long, soaking monsoons. But looks can be deceiving. Citrus trees grown between wet paddy fields have in the past been a good cash crop, but the fruit has become bitter and the trees are dying due to citrus greening (citrus huanglongbing), which poses a danger to Australia if the insect that carries the bacteria makes its way to our shores.

Banana trees grow like weeds, and a healthy snack hangs within arms' reach of the villagers. But fungal and bacterial wilt diseases have spread rapidly in recent years.

For protein, Indonesians, like Australians, are developing a taste for duck dishes. Ducks are farmed either at the back of village houses, or by herdsmen moving them between rice-growing districts. But avian influenza (H5N1) has arrived in the past five years and is now endemic in the country.

Javanese rice farmers work their paddies to produce three crops a year and, for the first time in many years, 2008 saw Indonesia self-sufficient in rice. But underlying this self-sufficiency is the ongoing need for rice varieties with adequate resistance to pests and disease.

Shrimp farming is a highly productive way to

use brackish water throughout the archipelago. Farmed shrimps, sold to Japan, the US and Europe, contributed almost US\$1 billion to the economy in 2004. But ensuring clean water flows between ponds hasn't been a high priority, leading to diseases spreading freely between farms.

## AUSTRALIA'S CONTRIBUTION

For all these challenges, Australia is there with research and development projects. Without assistance, the question of food security will become pressing in this massive, densely populated country. Half the Indonesian population still survives on less than US\$2 a day.

Indonesian agencies are working with ACIAR on 40 different projects. This year ACIAR will spend A\$11 million on seven main areas to tackle diseases and lift farm productivity.

University of Adelaide-trained Dr Luthfi, a social adaptive researcher for ACIAR's agricultural projects, says ACIAR now focuses on high-value commodities for which there is a strong market demand. There are three areas of particular interest.

"The first aims to reduce the farmers' vulnerability, so we are developing tropical pulse, peanut, mungbean and rice technology that can be disseminated further," he says. "The second theme is promoting benefits from high-

value products such as timber forest products, coffee, mangoes, citrus, passionfruit, lobster and mariculture; and the third theme is increasing demand for animal protein."

## COMMITMENT TO MAKING A DIFFERENCE

As we travel to different projects across Java, be it on citrus disease, bird flu testing or shrimp production in ponds, the researchers are warmly welcomed.

Both Australian and Indonesian ACIAR staff show an impressive commitment and belief they are making a difference to village life, if not immediately then certainly over time.

ACIAR's Indonesia country manager Julien de Meyer agrees there is an amazing thirst for knowledge, and he has seen this in West Papua, in the remote eastern islands of Indonesia. The farmers there are being encouraged to grow the orange sweetpotato to ensure beta-carotene and vitamin A enrich their diet.

The project leader took his computer to West Papua to show the sweetpotato planting trials. The villagers loved the computer and sat around, wearing not a stitch, fascinated by the technology. While it was entertaining for the illiterate farmers, they needed to see diagrams of growing techniques they could work with.

"It comes back to my point that you can't



bring in high-tech technologies," Mr de Meyer says. "You need to bring it back a notch and bring the knowledge that they can understand, and then they can extend within their families or within their communities."

#### FOOD SECURITY IN INDONESIA

For the first time in a quarter of a century, Indonesia has produced enough of its staple food—rice—to feed the country's population. It's a huge effort for a nation where 15% live below Indonesia's own measurement of the poverty line.



Professor Achmad Suryana, Indonesia's head of food security.

PHOTO: ADI RACHMATULLAH

In contrast, Australia in good years has a surplus and exports about 60% of its agricultural production.

"The Indonesian population is more than 230 million right now, which means that 35 million are living below the poverty line," says Professor Achmad Suryana, Indonesia's head of food security.

Indonesia defines poverty as below US\$1.30 a day, as per a ruling by the Asian Development Bank for Asian countries.

As the Director-General of Food Security, Professor Suryana works in an office in a large complex of high-rise buildings that make up the Department of Agriculture, in the hectic capital Jakarta. He says the Government wants to improve nutrition for the country's poorest people.

"Most of them are still eating less than the food requirement for living healthy and productive lives." So they're still malnourished? "Yes," he says.

Professor Suryana has seen the work of Australia's aid—through ACIAR—up close when he was head of research and development

Technicians testing ducks for the highly pathogenic bird flu H5N1 for an ACIAR-funded project in Java that is examining the role nomadic ducks play in spreading the virus.

PHOTO: ADI RACHMATULLAH



Shrimp farming can be worth \$1 billion to Indonesia, disease free. ACIAR's project is teaching extension staff best management practices.

PHOTO: ADI RACHMATULLAH

in Indonesia is now developing links with agribusiness and has some projects in extension.

### GROWING PRAWNS IN INDONESIAN PONDS

Helping Indonesia reclaim its position as a leading producer of farmed prawns is one example.

In the mid-1990s, Indonesia was a leading producer of large tiger prawns or shrimp, turning out 120,000 tonnes a year. But in 1998 white spot viral disease swept in.

In the flat lands of coastal Central Java, rice farmers have tentatively begun farming prawns, or shrimp, again in some ponds.

Professor Ketut Sugama develops clean prawn parent broodstock in the Department of Fisheries. "Once affected by white spot, mostly 100% (are) killed," he says.

for more than four years. "ACIAR helped us a lot in terms of R&D, first of all through the empowerment of our research capacity and our researchers."

### CAPACITY BUILDING

Julien de Meyer says ACIAR has been in Indonesia with agricultural aid projects for 25 years. Over that time an enormous wealth of education has been amassed by the Indonesian scientific partners, he says.

He points to the people they have trained and continue to sponsor, which they call 'capacity building'. "Since 1986, more than 50 Indonesians have completed or are now taking postgraduate courses of study in Australia thanks to the John Allwright Fellowship scheme. All have worked with ACIAR projects," Mr de Meyer says.

The graduates have returned to better jobs and all of them say they were able to use their new knowledge in their institution or work.

"When a disease needs work in both Australia and Indonesia, they share information through the scientific community, by email and through conferences or workshops," Mr de Meyer says.

This cooperative approach typifies ACIAR's approach to working with its partners in countries such as Indonesia.

### DEVELOPING THE MARKET: AGRIBUSINESS

The challenges Australia faces in getting good prices and delivering food fresh are worse in Indonesia. That's why Australian agricultural development assistance in Indonesia is undergoing a shift from strictly scientific research into diseases to developing smallholder farmers as agribusiness people.

Included in that aid is a new area for ACIAR, the Smallholder Agribusiness Development Initiative (SADI), which is also funded by AusAID. Away from the area of disease research and extension, SADI aims to link specific produce to the best markets.

That can range from cocoa production in South Sulawesi, to peanut farming on Lombok Island; pigs in West Timor to the \$1 billion shrimp industry in Java and elsewhere.

Mr de Meyer says the work ACIAR is doing

## Intensive animal industries evolve in West Timor

**I was last in West Timor 15 years ago when my mother, veterinarian Dr Russ Locke, was working on an AusAID-funded project to develop veterinary services in the eastern islands.**

**When we returned we found there had been rapid changes in agriculture brought about by aid projects and a bustling economy in the regional capital Kupang.**

**Fifteen years ago Dr Locke worked on a village chicken project to vaccinate chickens for Newcastle disease and encourage village women to keep the birds in coops so they could be fed properly.**

**"It was based on the women doing all the work because women do look after all the chickens," Dr Locke says.**

**"The chicken meat and the eggs allow the women to feed their family a bit better and they can sell the eggs to get money to buy oil to do their cooking and perhaps a little bit for education to buy books for their children."**

**But what she saw when she returned surprised her. It had leapfrogged the village scale to become intensive broiler farming.**

**"Well, it's hardly going now as a chicken project," she says. "They now buy in day-old chickens from Surabaya for about 18 rupiahs (less than one Australian cent each) and sell them when they're fat for 1000 rupiahs (about 14 cents) in the local market."**

**They have to vaccinate the caged chickens at one month for Newcastle disease and sell them before they need the second shot.**

**The locals say the village project in the 1990s helped the villagers understand the importance of vaccination and correct nutrition.**

### PIG INDUSTRY DEVELOPMENT

**The pig industry has expanded rapidly in the eastern islands in the past five years. Now the region has 1.5 million pigs. Driving that growth is new wealth in Kupang, West Timor, and a taste for the smoked barbeque pork called Se'i.**

**Pig farmer Osias Saban owns a pork restaurant, specialising in Se'i, which he was preparing when we visited. He learnt the smoky barbeque technique from his father, who was a cook for the 'Dutch king' during the Dutch colonial period.**

**His family has done well in the past five years and they have been able to put three children through university.**

**Dr Johanis, a lecturer in animal nutrition, says that about 85% of people in Nusa Tenggara Timur grow pigs, and a "party without a pig is not a party".**

**Alongside this cultural use, some pig producers are making great money. One of the largest pig breeders in West Timor has 100 sows and could breed up to 1,000 piglets a year that he sells to smallholders for fattening for 600,000–700,000 rupiahs, or nearly A\$100 per piglet.**

Professor Ketut has selectively bred tiger and white prawn varieties, and supplies the parents and seeds (as the babies are called) to farmers.

Visiting the prawn farms is Australian aquaculture expert Dr Richard Callinan from the University of Sydney, who says white spot virus is still active.

"It came here in the mid-1990s. Before that shrimp farming here was very simple and farmers did very well, including the smallholders," Dr Callinan says. "But by the mid-1990s it had come really out of China and spread to every country that bred shrimp, (but) not Australia.

"Every country except us got white spot. The reason we didn't get it was because of our very strict quarantine laws.

"The disease is being spread by careless

movement of seedstock. Or the broodstock, the big parent animals, are being carried from country to country. They can be healthy looking but they carry the virus, and when they go into ponds or into hatcheries, and they get stressed, they get sick."

#### AUSTRALIA LENDS A HAND

ACIAR has a project to help promote better pond management in Central Java and Sulawesi. Dr Callinan is there to train extension workers who, in turn, train the shrimp farmer groups.

"We have to keep white spot virus out of the ponds and we have to help the farmers learn to manage their ponds in a very low-stress way for the shrimp. Even though we do our best with biosecurity, in many cases white spot gets into the ponds," he says.

"Prawns can become stressed in a variety of ways: you can overcrowd them, you can underfeed them, but the main problem is the environmental conditions in the ponds—such as dissolved oxygen concentrations, pH, salinity changes, temperature changes—because they're crowded together in unnatural concentrations.

"The virus that they're already carrying proliferates and within a matter of three or four days, the whole pond is lost," Dr Callinan says.

Extension of ACIAR-funded research results is helping alleviate this problem.

Dr Ageng is an expert in extension and communication at the Gadjah Mada University, looking into best management practice (BMP).

"It cannot work if the farmers will not be a disciplined group," Dr Ageng says. "That's why we try to encourage the extensionists to deliver the message on how to build a disciplined farmers' group so they can practice BMP in a wide area."

Shrimp farmers generally rotate shrimp with rice cropping, growing two harvests of shrimp in the wet season, and one crop of rice in the dry season.

Dr Ageng says the profit is quite good for shrimp. He says for one hectare they get rupiah 1.5 million a month (about A\$200 a month), compared with rice being only for their own consumption.

Head farmer Pak Hidayat is enthusiastic about the upcoming shrimp harvest from the pond. "If the farmer can see the increase is up to 25%, and will gradually improve, many farmers will be interested in applying this kind of technology," he says through a translator.

Indonesia has high hopes for its shrimp sector. "What we call it now is the sleeping giant," says Dr Budi Prayitno, the head of the Provincial Planning Board (BAPPEDA) in Central Java. "If we could produce back to 1998 (levels), we could become a rich country."

Dr Budi wants to use the scientific rigour of BMP to control white spot and develop the salty ponds for fish and seaweed as well.

"The first one is prawn, the second is milkfish and now seaweed," he says. "Seaweed is the best species to recover the ponds, because after we use these ponds for several years, with a lot of compost and fish waste, seaweed is a good species to increase the quality of the pond.

"It has very low input, and you could harvest every two weeks without any problems."

The seaweed is for carrageen, used in cosmetics. ■



Dr Maria Geong, head of animal health and public veterinary services in the eastern islands of Indonesia, West Timor, with Dr Ketut Jaya, a university lecturer in animal husbandry and also a large importer of young cross-bred piglets from Bali that he sells to smallholder farmers in West Timor.

PHOTO: SARINA LOCKE

#### INTENSIFICATION OF PRODUCTION

The pigs appeared healthy and well fed. But these social animals have gone from roaming free in the village to being kept confined to small pens. The broiler chickens, too, are kept in small barns.

Intensification of animal husbandry seems to go hand-in-hand with development, but there's no question the people benefit from increased protein in their diet.

ACIAR has projects helping to identify market potential and on how to control pig diseases.

Dr Johanis conducted a survey in West Timor and found the young tender pigs are destined for restaurants and the older, dark boars with tusks are good for cultural events.

#### DISEASE CONTROL THROUGH SONG

With the exploding number of restaurants, communities are concerned about the short supply of pigs for cultural events.

Cross-bred pigs are imported from Bali, but disease control is vital. When classical swine fever swept into the eastern islands, it killed thousands of pigs.

Dr Maria Geong gained her PhD at Murdoch University in Western Australia on an Australian scholarship. She is now head of animal health and public veterinary services in West Timor.

She says 80% of the region's pigs are infected with classical swine fever. The disease is chronic and an infected sow can infect all the piglets. She has support from ACIAR to study the epidemiology of the disease, and has successfully vaccinated pigs on Alor Island, where there have been no more cases. She has proved the disease can be controlled and even eradicated from Nusa Tenggara Timur (NTT).

Australia is free from classical swine fever, and Dr Geong is hoping it can stay securely free, if they can rid the NTT region of the disease.

She is also trying to protect the island from porcine reproductive and respiratory syndrome.

Dr Geong has even written some children's songs about identifying pig diseases to raise awareness among illiterate villagers.

– SARINA LOCKE