



Making a difference

Rat trap in the field

Vision

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

In 2003–04 ACIAR continued to work with a number of extension and non-government organisations to ensure the results of research are disseminated. Outcomes of ACIAR’s first project with World Vision, involving farming communities in Thailand, Laos and Vietnam were reviewed during the year and lessons learnt are being applied in the development of similar approaches. Six subprojects worked with farmers and rural communities to incorporate new, low-cost and practical approaches to deliver the results of ACIAR-supported research.

Collaborative projects with World Vision

Location of subprojects	Benefits
Songkla, Thailand: introducing low-pesticide technology	510 families growing pesticide-free vegetables 2,000 families benefiting indirectly
Udon Thani/Surin, Thailand: improving aquaculture production	600 smallholders have built household ponds with 1,000 secondary beneficiaries
Chiang Rai, Thailand: low-chill fruit	18,000 seedlings distributed to 1,000 families Two community training and demonstration centres established
Savannakhet, Laos: improving crop yields in rice farming	157 farmers in 32 villages formed farmer groups to trial improved varieties which have demonstrated yield advantages and improved fertiliser use
Vietnam: rodent management	The Vietnamese Government has adopted the Community Trap Barrier System as part of its official integrated rodent management strategy Care International is disseminating information
Bac Binh Province, Vietnam: Soil fertility management	200 farmers involved in trials demonstrating yield improvements for peanuts and improved crop management techniques

“Australia’s assistance is helping reduce rural poverty by increasing opportunities for the poor to generate income by:

- **increasing agricultural sector productivity**
- **stimulating non-farm employment**
- **managing natural resources sustainably”**

(Australian Aid: Investing in growth, stability and prosperity – Statement to Parliament, *Minister for Foreign Affairs, September 2002, page 37*)

Introducing low-pesticide technology

In the Songkla Basin in the south of Thailand ACIAR-supported research proved that chemical runoff was causing significant contamination of drinking water. World Vision worked with hundreds of small farmers in the area, whose livelihoods depend on vegetable production, to introduce low-pesticide technology based on this research. Together they were

able to change horticultural practices to substantially decrease the use of chemicals without affecting economic viability. Adoption of the methods introduced in the project has led to a three to four-fold reduction in the use of chemical fertiliser and insecticides and an increase in farmers' incomes through lower input costs. As well, **farmers have marketed their own 'pesticide-safe' label in local supermarkets for a 20 per cent premium.**

A rubber-tapper who also grew vegetables on an opportunity, part-time basis was trained in the low pesticide technology, and through membership of a small revolving credit group formed by World Vision, purchased drip irrigation equipment and other inputs. His first crops were so successful that he has now moved into full-time farming with his wife, adding value to his produce by selling cooked corn-on-the-cob on local market days. With a great deal of pride he explained to a team reviewing the project that he is now a trainer for other farmers joining the pesticide-safe program.

Improving aquaculture production

Another subproject has successfully introduced new methods of fish farming using low-cost feeds, substantially boosting its profitability. The subproject, based in Udon Thani and Surin provinces of Northeast Thailand successfully demonstrated that community-based fish production enterprises supplying low cost inputs (feed and fingerlings) **increase food security and incomes.** These low-cost feeds utilised locally available resources, backed by simple preparation methods developed during an earlier ACIAR project. Before the World Vision-ACIAR work, locals relied on purchased feeds for fish farming, substantially reducing profit margins and limiting incentives to uptake. The collaboration with World Vision enabled information to be distributed on the preparation of fish diets including financing production of small pelleting machines used to prepare feeds.

Community centres are now operating in Udon Thani and Surin and a large number of training courses have been run at both centres for fish breeding and production of low-cost, farm-made feeds. About 600 people have built small household ponds. Experiments comparing the home-made diets with commercial diets have demonstrated similar or better growth and feed conversion ratios than commercial pellets.

Critical success factors	Key performance indicators	Strategies
Research outputs that clearly align with improvements to productivity and sustainability of agricultural systems	Evidence of uptake and use of research outputs	Build dissemination ... pathways into project design and execution, and work with agencies that are committed to deliver benefits

Source: ACIAR Corporate Plan 2001-2006



Dr Kong Luen Heong holds a poster to raise awareness of the dangers of excessive use of pesticides

Collaboration with World Vision has enabled results from ACIAR projects to be extended to many more farmers.



Pellet-making machine for fish feed

Benefits include more feedback to researchers, greater testing of the new methods and better trained extension workers.

World Vision project review

A review of the ACIAR–World Vision project concluded that the collaboration had been very successful, with **five of the six subprojects producing results above expectations**. All the components established effective community groups and have enhanced the capability of local technology providers (research and extension groups) by working closely with local government resource people. ACIAR and its research partners also benefit through feedback on the suitability of their technology; broader testing of the technology; better leads as to future directions; and better trained extension workers.

The World Vision projects and the review have highlighted areas that ACIAR is trying to improve in order to maximise the benefits from its funding of agricultural research and to further enhance impact on rural development. ACIAR is now working on a strategic alliance with Australian Volunteers International, and continues to provide assignments to the AusAID-funded Australian Youth Ambassadors for Development.

Strengthening our Impact Assessment program

ACIAR impact assessments conducted in 2003–04

Project/ assessment	Cost (\$m)	Benefit (\$m)
Rodent control in Vietnam*	n.a.	n.a.
Genetics and breeding for rust resistance in India and Pakistan	3.3	57.2
Grain market reform in China	2.7	12.7
Acacia hybrids in Vietnam	1.0	152
Water and nitrogen management to increase agricultural production and improve environmental quality in China	2.8	219
Biology and management of coconut crabs on Vanuatu	0.7	3.2

All figures in A\$

* Farm-level benefit calculated at A\$1,565/ha

n.a. Not applicable

Monitoring the impact of completed projects is the focus of ACIAR's Impact Assessment Unit. The Unit commissions impact assessment reports which focus on measuring the economic and dollar returns to agricultural research and the impacts of projects on poverty reduction. Further details can be found on pages 86–90.

Impact assessment reports completed in 2003–04 include an assessment of **rodent control projects in Vietnam** which showed an average farm-level benefit:cost ratio of 22:1 and a net present value of A\$1,565 per hectare. Benefits from the projects carried out in five provinces in Vietnam included reduced yield losses, lower rodent populations in project areas, reduced use of toxic rodenticide, decreased use of plastic fence to protect crops, and decreased rodent control costs.



Vietnamese farmers hunting rats

An impact assessment report investigated the economic benefits of ACIAR-funded projects on genetics and breeding for **rust resistance in wheat**. The main objectives of the projects were to investigate and enhance the sources of rust resistance in wheat in India and Pakistan, and to provide training for Indian and Pakistani rust scientists at the National Wheat Rust Control Program at the University of Sydney. The present value of the benefits, calculated over 30 years (A\$57.2 million), is well in excess of the present value of the project costs (A\$3.3 million), giving a benefit:cost ratio for the projects of around 17:1. Scientists in both India and Pakistan have developed greater expertise in the management of a major disease of wheat and improved capacity in the diagnosis and management of other wheat diseases.

An assessment of two ACIAR-funded projects, conducted as part of a wider research thrust, to demonstrate the benefits of **grain market reform in China**, showed benefits had resulted from advancing the pace of policy reform. The report estimated a present value for the ACIAR-supported component of this body of research of A\$12.7 million and a benefit:cost ratio of 5:1, resulting from Government adoption of less interventionist policies.

A project to develop methods for **breeding hybrid acacias** in Malaysia resulted in some remarkable spillover benefits to Vietnam. An impact assessment of the project showed a benefit of A\$152 million over 30 years which represents a significant return on the relatively modest investment of A\$1.04 million in the ACIAR-funded project. This is due to the rapid adoption of acacia hybrids on a commercial scale in Vietnam and the high yield advantage of the hybrids.

The ACIAR-funded project, **Water and nitrogen management** to increase agricultural production and improve environmental quality, investigated the efficiency of traditional rates of nitrogen and water use **in wheat-maize production on the North China Plain**. Adoption of the project recommendation results in a 12–18 per cent fall in input costs or an increase in net income of between A\$50 and A\$109 per year for each farm. In present value terms, over a thirty year time horizon, the economic benefits that accrue to farmers growing wheat and maize on selected areas of the North China Plain is A\$219 million. The benefit–cost ratio is 77:1.

A suite of projects, funded by ACIAR and AusAID, aimed to provide a scientific foundation for **improved management of the Vanuatu coconut crab resource** that would benefit the Ni-Vanuatu people. The primary beneficiaries are the poor rural households in remote parts of Vanuatu, who benefit from the considerably larger subsistence catch. The impact on poverty levels also is predicted to be significant for the estimated 600 plus crab collecting households on Vanuatu. For example, a number of collecting households in Sanma Province reported cash earnings from commercial crab harvesting of A\$2,000 to A\$2,700 per household. The present value over a 50 year period is estimated to be around A\$3.2 million resulting in a benefit–cost ratio of 5:1.

The net present value benefit of bringing forward the commercial release of acacia hybrids by four years in Vietnam is estimated at A\$152 million over 30 years.



Adoption studies—a new initiative

In 2003–04, ACIAR expanded its investment in ‘measuring impact’ by implementing a system to enable Australian project leaders to undertake adoption studies for all large projects three years after project completion. The main purpose of these adoption studies is to assess the level of uptake of the project results that has occurred since the end of the project, and whether or not the project has made a difference to the social, economic and/or environmental wellbeing of a community. During the year 12 adoption studies were completed. The information gathered from these studies will be used to help guide future investment in ACIAR projects.

Factors enhancing uptake of results

Analysis of the studies showed that uptake tended to be higher in situations where one or more of the following factors applied:

- on-going participation by a core group of in-country scientists who are committed to the project and its outcomes and have local credibility
- a varied and comprehensive approach to communication and dissemination activities that target the right audiences in the right languages
- a strong training component in extension activities to help ensure that new understanding and skills are passed on and are able to be implemented in the field
- establishment of good personal relationships between researchers and next users of the research, including key decision makers.

Community impacts

There was evidence of community-level economic benefits for three research projects that were developed to deliver new technologies or practical approaches. These are the mud crab aquaculture projects in Indonesia and Vietnam, a project to introduce compatible mycorrhizal (root) fungi to eucalypt plantations in China, and a project on tree establishment and production technologies in the Philippines and Australia.

In the case of the mud crab projects in Vietnam, there has been substantial expansion in mud crab hatchery and nursery production and in the number of grow-out ponds owned and operated by smallholders. As hatchery-produced crablets are cheaper and have a higher survival rate than wild stock, the returns to smallholders from mud crab production have increased.

Compatible mycorrhizal (root) fungi that improve nutrient uptake and growth performance of eucalypts are often missing in exotic eucalypt plantings. The ACIAR project showed how introduced Australian fungi improved growth and establishment of eucalypts in China, and further refined and developed the technologies of incorporating these fungi. This project had a positive impact due to the use of previously unproductive

Uptake is likely to be enhanced if the extension activities include a strong training component.

“The best, though rarest, aid projects are those that impart knowledge and skills and leave in place technology that is sustainable in local conditions.”

D Kingsbury, et al. 2004, Key issues in development, Palgrave MacMillan, p.8

Building research capacity

“Effective aid to support development is more than just money. Australia’s most effective contribution to international development is as a source of ideas and expertise, building the capacity of people and strengthening institutions.”

(Australian Aid: Investing in growth, stability and prosperity—Statement to Parliament, Minister for Foreign Affairs, September 2002, page 22)



land and greater commercial investment in eucalypt plantations. It is a good example of how a project can leave a legacy of a group of trained scientists to carry on further research, with enough skills, credibility and success to also gain further funding for on-going research. The ability for in-country scientists to obtain further funding is a common success factor of many of the projects.

Projects that can make a difference at the community level through influencing policy changes include ones on land use in Sri Lanka, and the Chinese cattle and beef industries. In Sri Lanka, there is potential to reduce land degradation and increase land viability and economic stability. In China, efficiency of the beef industry has improved, and direct investment by Australia and others has increased.

Building capacity: impacts of the John Allwright Fellowship scheme

To further support the investment in building the agricultural research capacity of our partner countries, ACIAR invests \$1.5–1.6 million annually on John Allwright Fellowship (JAF) awards for postgraduate study in Australia by scientists involved in active ACIAR projects.

Between January and April 2004, ACIAR conducted a detailed survey of recipients of these scholarships. The overall objective of the survey was to evaluate the impact of the program on the awardees and their institutions. The survey covered all former fellows who had successfully completed their degrees and had returned to their home countries.

Major findings included:

- the success rate of JAFs is very high—91 per cent of those who accepted an award completed a higher degree

The ability for in-country scientists to obtain further funding is a common success factor of many of the ACIAR projects.

In terms of employment, career paths and the impact of fellows on their research institutes, the JAF scheme has very positive outcomes



Dr Agustina Rahmianna of the Legume and Tuber Research Institute, Malang, Indonesia

- most of the former fellows (80 per cent) are still employed by the same employer who released them to undertake the Fellowship
- almost all (92 per cent) of former fellows regarded their fellowship as totally or strongly related to their current employment position.

The career paths of two former fellows are illustrative of the success of many fellows upon their return home. Dr Agustina Rahmianna of the Legume and Tuber Research Institute, Malang, Indonesia, completed her PhD in 1997 at the University of Queensland. Since graduating she has been promoted from assistant researcher to Chief of the Ecophysiology and Agronomy Research Group and is the leader of an ACIAR project.

Mr Lauatu Tautea of the Cocoa Board in Rabaul, Papua New Guinea, completed his Master of Economics in 1992 at the University of New England. He has risen from being an economist to Chief Executive Officer of the Cocoa Board. His studies took the Board in a new direction by adding a market economics emphasis to its planning.

The John Allwright Fellowship Scheme has now seen more than 100 young agricultural scientists from 17 developing countries in the Asia-Pacific region graduate with a Masters or PhD, and return to become involved in research in their home country. Many, like Agustina and Lauatu, are making a difference in their own countries.

John Allwright graduates to date

Country	Number of Graduates	Undertaking a Fellowship*
Bangladesh	–	1
Cambodia	1	1
China	16	–
Fiji	3	2
India	3	4
Indonesia	15	7
Kenya	3	–
Kiribati	1	–
Laos	1	–
Malaysia	7	–
Nepal	1	1
Pakistan	3	1
Papua New Guinea	7	11
Philippines	17	6
Solomon Islands	1	1
South Africa	1	–
Sri Lanka	2	1
Thailand	11	–
Tonga	4	–
Vanuatu	–	1
Vietnam	4	7
Zimbabwe	2	1
Total	103	45

* as at 30 June 2004

