Australian Government

Australian Centre for International Agricultural Research

Annual Report 2006–07

ACIAR House has installed water tanks—new water conservation strategies, combined with the introduction of stage three water restrictions in the ACT, has resulted in a reduction of 47% in water consumption. In 2006–07 633 kilolitres were consumed by the Centre, compared to 1333 kilolitres in 2005–06.

ACIAR had previously converted garden areas surrounding its building to low water-use plants, with minimal drip irrigation, monitored by a central timer. To support further water conservation ACIAR has installed water tanks to store rainwater. These will be used mainly for irrigation purposes, reducing irrigation from mains supply.

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The Hon Alexander Downer, MP
Minister for Foreign Affairs

The Hon Alexander Downer, MP
Minister for Foreign Affairs

Dear Minister

ACIAR Annual Report 2006–07

It is my pleasure as the outgoing Chair of the ACIAR Board of Management to present to you the Annual Report of the Australian Centre for International Agricultural Research 2006–07.

Following changes to the governance framework for ACIAR on 1 July 2007, the Board was replaced by an oversight Commission that will, in future, provide advice to you on ACIAR programs. Administrative and financial management of ACIAR will rest with the Chief Executive. In that context, this will be the last Annual Report transmitted by the Board of Management. Future Annual Reports will be transmitted directly by the CEO.

ACIAR has done an outstanding job over the years and I am sure this will continue in the future. ACIAR has a very important responsibility to facilitate innovations that will strengthen rural development in our partner countries.

As the outgoing Chair and on behalf of the Board, I want to thank you sincerely for the support and interest that you have given to ACIAR and its Board. We could not have asked for more.

My colleagues and I thank you for the opportunity and honour of serving on ACIAR's Board of Management.

Yours sincerely

Dr Meryl Williams
Outgoing Chair
ACIAR Board of Management
October 2007

cc. The Hon Greg Hunt, MP, Parliamentary Secretary (Foreign Affairs)

ACIAR outgoing Board of Management 2006–07—Director Mr Peter Core, Dr John Williams, Ms Joanna Hewitt, Chair Dr Meryl Williams, Mr Peter Corish

Contents

Four-year snapshot

Financial ($ million)	2003–04	2004–05	2005–06	2006–07
Revenue				
Appropriation	46.852	47.523	49.334	50.362
AusAID funds	3.169	3.646	5.437	9.906
Other revenue	0.053	0.322	0.807	0.629
Total	**50.074**	**51.492**	**55.578**	**60.898**
Expenditure				
Bilateral research	27.732	29.507	32.805	36.206
Multilateral research	10.200	9.984	10.002	10.310
Education and training	2.464	2.565	2.909	4.132
Communicating research results	0.752	0.777	0.690	0.657
Salaries	4.795	4.748	5.177	5.153
Corporate support	4.065	3.820	3.836	4.385
Total	**50.008**	**51.401**	**55.419**	**60.843**

Operations	2003–04	2004–05	2005–06	2006–07
Collaborative Research				
Projects active in FY				
Bilateral	192	201	267	292
Multilateral	29	26	30	30
Projects started in FY				
Bilateral	38	51	76	97
Multilateral	8	7	6	8
Projects extended in FY				
Bilateral	33	41	47	106
Multilateral	5	4	2	10
Projects reviewed in FY*	34	24	34	35
Projects completed in FY**	50	43	93	96
Building capacity				
Non-project specific training courses	8	13	13	12
Fellowships				
John Allwright Scholars active in FY	50	52	57	96
Scholarships awarded in FY	6	10	15	61
John Dillon Fellows in FY	3	6	5	7
Our Staff				
Staff - Public Service Act (FTE)	44.3	42.04	44.44	43.84
Overseas officers - Locally engaged (FTE)	18.8	20.5	20.5	20.5

* Includes both bilateral and multilateral projects

** Includes both bilateral and multilateral projects concluded and to be concluded as at 30 June 2007. Some of these projects may be extended following a review process.

2006–07 at a glance

- Revenue increased from $55.6 million in 2005-06 to $60.9 million in 2006–07. This larger revenue base came from increased AusAID support for:
  - The ACIAR components of the Smallholder Agribusiness Development Initiative in Indonesia (SADI).
  - Postgraduate training—the John Allwright Fellowships.

More on pages 40, 101, 133

- Outlays lifted to $60.8 million in 2006–07 from $55.4 million in 2005–06. The operating surplus for 2006–07 was $55,000, compared with $159,000 in 2005–06.

More on pages 133, 157

- The number of active projects increased from 297 in 2005–06 to 322 in 2006–07. This increase comes from a number of scoping studies which are really pre-project feasibility studies. ACIAR's intention is to do larger, fewer projects based on stronger due diligence. This will underpin our efforts to focus our joint programs with partner countries.

More on page 6

- During 2006–07 we expanded our postgraduate training scheme with the support of AusAID. Our long-term goal is to have trainees associated with most bilateral projects. In 2006–07 we had nearly 100 active scholarships compared with 57 in 2005–06. Our Impact Assessment Program took a very significant step forward in 2006–07, with its ground-breaking work on assessing the impact of such training.

More on page 101

- The foundations of the ACIAR component of Smallholder Agribusiness Development Initiative (SADI) in Indonesia were put in place during 2006–07. Our component will be fully operational in 2007–08.

More on page 40

- Our programs in Pakistan, Afghanistan and Iraq continued to be challenged by circumstance, but continued to deliver results in 2006–07.

More on pages 73, 80, 81

- During 2005–06, ACIAR worked closely with the Department of Foreign Affairs and Trade (DFAT) on the new governance arrangements that came into effect on 1 July 2007.

More on page 121

- Staffing levels (FTEs) at ACIAR did not increase in 2006–07, but we did take on additional contractors in Indonesia to cover part of our SADI involvement. Outlays on salaries increased from $5.2 million in 2005–06 to $5.3 million in 2006–07.

More on page 6

Young Indonesian school-girls returning home at the end of the school-day

Impact assessment snapshot

ACIAR's impacts—major efforts this year

Capacity building has always been recognised as a significant part of ACIAR's focus and source of impacts.

This year we commissioned a study to develop a framework for quantifying these impacts on a consistent basis as with the direct effects which are usually measured. This produced a significant advancement in methodology.

The framework was applied to three projects, and returns to capacity building were found to be up to $199 million net present value (NPV). In some cases, this far exceeded the benefits from the direct impacts.

This year, stratified random sampling was also used to choose four projects for assessment. This is probably the first time this approach has been used anywhere.

A range of impact benefits were estimated from very high, a NPV of $199 million to no measurable impact yet, for one of the projects. In that case the research did, however, contribute to a better understanding of what makes mangos flower. This output has contributed to further research which may solve this important problem and produce impacts, some of which would be attributable to this project.

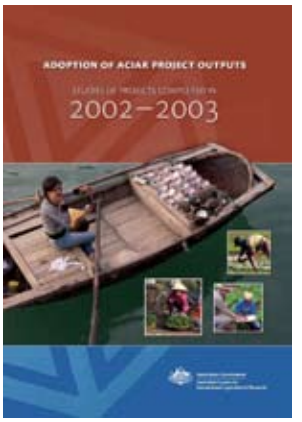
Mango flowers

ACIAR's impact assessments

Seven assessments were published in 2006–07 all showing continued strong investment returns for ACIAR research.

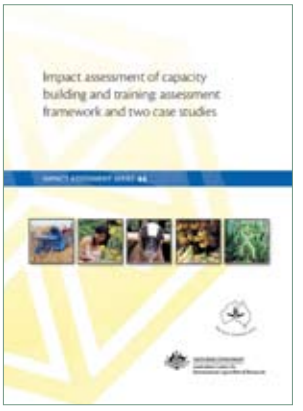
ACIAR's adoption studies

Large projects (more than $400,000) completed in 2002–03 were reviewed, with results published in a summary report.



Capacity building has high returns on investment.

ACIAR and the ATSE Crawford Fund commissioned a study to develop a framework for quantifying the benefits from capacity building activities associated with research projects. This was applied to two case study research projects. One on pigeon pea breeding in India found that the capacity built through the project generated a NPV of $67.6 million with a benefit cost ratio of 28:1 and IRR of 23%. For the other, on water management in Vietnam, the benefits were much smaller at $82,800 but the return on a smaller investment was sound with a benefit cost ratio of 13:1 and an IRR of 28%.



Development of eucalyptus plantations in China reviewed.
Previous impact assessment studies have shown that the return to forestry research investment on eucalypt species in China has been extremely high. An extensive plantation forestry sector has developed during the last 30 years and a large share is planted to eucalypts. The research which supported this development has provided major improvements in tree productivity. Estimates of the returns on the research investments show that the NPV of these gains is over $900 million. However, the development story is very complex and ACIAR felt that it was important to document this. This report shows that such substantial development and growth requires a combination of efforts from research through to, significant policy commitments to other investments. The review provides an important illustration of these and lessons for others.

Better understanding of bee mites reduces quarantine risks.
Honeybees provide several services to national economies, ranging from the honey produced to pollination of many crops. Varroa mites are a major bee pest throughout the world and cause substantial losses, and therefore costs, to many industries via their impact on bees. Australia is the only country which does not have this pest. ACIAR funded research has lead to some major breakthroughs in understanding this pest and then subsequent improvements in quarantine procedures which reduce the cost and especially reduce the risk of incursion. The study shows that the NPV of the benefits are $100 million with a benefit cost ratio of 25:1 and IRR of 30%. In this case the major share of the benefits is to Australia.

Improved Australian tree species have a significant impact in Vietnam.
Following the substantial success of Australian trees species in many countries including China and Brazil, collaborative research adapted these species to best suit Vietnamese conditions. The results have been rapidly adopted in Vietnam and the study has shown that the benefits for the research were around a NPV of $130 million, benefits cost ratio of 83:1 and IRR of 32%.

Technologies to treat mangos for fruit fly lead to increased trade.
Fruit flies are a major pest in many countries with species varying between countries. Chemicals have traditionally been used to control these pests and this use was accepted to satisfy quarantine requirements. However, increasingly these chemicals are not accepted, so other treatment technologies are required to maintain access to most markets. Mangos are a relatively high value export crop for Thailand, the Philippines and Australia. This project adapted methods from other research and provided cost effective heat treatment for the three countries. The returns on this investment were found to be a NPV of $20.8 million, benefit cost ratio of 5:1 and IRR of 27%. Estimating the share of the larger gains which were estimated in the study to attribute to this research was a major issue for the study.

Message from the Chief Executive Officer and outgoing Chair

The World Development Report 2008: Agriculture for development

The World Bank recently released its World Development Report 2008: Agriculture for development. This Report focuses on the unique features of agriculture as an instrument for broad-based economic development. It is the first time in 25 years that the Report's focus has been on agriculture. As the Report states *'it is time to place agriculture afresh at the centre of the development agenda, in a vastly different context of opportunities and challenges'*.

From an ACIAR perspective, this Report and last year's Australian White Paper on Aid provides an opportunity for us to reflect on the key messages for rural development and economic growth and determine whether there are lessons for ACIAR programs in Asia and the Pacific.

The linkages between agriculture, development and poverty vary substantially between countries in our region. In some, agriculture is a major source of broader economic growth, and, in others, like China, agriculture is no longer the major source of national growth. However, in all cases poverty remains overwhelmingly rural and, even in China, agricultural productivity remains a challenge to feeding growing populations.

Even in our region, the trends in poverty reduction are not uniform. While the number of people in East Asia and the Pacific living on less than $1 per day fell from almost 500 million in 1990 to less than 200 million today, the number of rural poor has continued to rise in South Asia. A similar trend is evident in the Sub-Sahara African Region.

This heterogeneity among countries is one of the themes of the World Development Report—as it should be. The focus of ACIAR's programs in countries like East Timor and Papua New Guinea is very different to those in China or India. For some countries, our primary legacy will be the emerging strength of the agricultural research systems in partner countries and having helped get agriculture moving, lifting the productivity of food staples. For others, it will be the shift to higher-value agriculture, enhancing the vital role of the private sector in linking agriculture to markets and consumers and narrowing the income and productivity gaps between favoured and less-favoured regions. And for others, our joint efforts are clearly on the natural resource agenda in areas such as groundwater depletion, soil fertility, fisheries management and climate change. The 'Year in Review' section of this Annual Report reflects this inherent heterogeneity of our partner country relationships.

ACIAR's mandate is research for development—it seeks to promote innovation through science and technology and better institutional frameworks. The goal is adoption and higher incomes. But research is only one of the broad arrays of policy instruments required to foster agricultural development. The World Development Report highlights this but does underscore the very important contribution of public sector agricultural research to making smallholder farming more productive and sustainable. In fact, it argues that a sharply increased investment in research and development must be at the top of the policy agenda.

Strengthening national systems

The scientific heterogeneity highlighted in the World Development Report is also what some have described as the growing divide between the scientific haves and have-nots. For example, the overall growth in the Asia

and Pacific region masks the fact that just two countries—China and India—accounted for 60% of scientific spending in the region in 1995, jumping to more than 75% this year. In contrast, research spending in the Pacific has barely grown. At the global level, five countries (USA, Japan, Germany, France and the United Kingdom) account for around 70% of the world's science spending.

Not only is the divide widening between the scientific haves and have-nots, there is an ongoing contraction in support for public agricultural research and development among rich countries and a shifting emphasis to privately-performed agricultural research with its own licensing/access provisions.

In response to these trends, ACIAR is moving strongly to strengthen the national systems of partner countries. There is much to be done if partner countries in our region are to have the capabilities to tap global research systems. During 2006–07 ACIAR has, with the support of AusAID, doubled the number of postgraduate students working in Australia on ACIAR-related research programs.

In addition, we have expanded our senior management training—the John Dillon Fellowships—so that national research agencies in partner countries have the necessary leadership, management and financial skills. Capacity strengthening takes time to bring its returns, and in one sense, if the strength of our developing country research partners is not driving forward, we are actually sliding backwards, given the dynamic nature of the research challenge.

This additional emphasis in 2006–07 on strengthening national systems is also reflected in our efforts to measure the returns to capacity building. This work has been motivated by the lack of evidence to support the strongly-held convictions that improving human capacity is inherently valuable and absolutely necessary for the achievement of development objectives. While this measurement methodology is in its infancy, the two case studies published by ACIAR in 2006–07 show very high rates of return. In one case, a 3-year postdoctoral fellowship for an Indian scientist has estimated benefits of $70 million, based on the relative importance of the training activity to achieving the scientific objectives, development of improved pigeonpea cultivars, and the time to adoption.

The importance of capacity building was highlighted in ACIAR's survey of overseas stakeholders carried out during 2006–07. A key message coming from this survey was the importance that partners placed on capacity building and the opportunity to work side-by-side with Australian research organisations. It also stands to reason that capacity building, with attendant human capital growth, is an essential component of effective adoption and sustainable research systems. This is a central feature of ACIAR's mission.

We also have a broader context in which to put our efforts to strengthen national research systems in our partner countries. The Australian Government's White Paper released in April 2006—*Australian Aid: Providing Growth and Stability*—places a renewed and special emphasis on 'investing in people'. These programs have many guises across the health and education sectors but one that stands out as an indicator of the Australian Aid Program's efforts is that, over the next 5 years, the number of education awards offered for the Asia-Pacific region will double to 19,000.

Feeding billions – when food makes fuel

Over the past year there have been significant increases in the international price of basic grain staples such as wheat, maize and rice. There are a number of reasons for this, including population growth and the rising demand for animal protein (eggs, milk, meat and aquaculture) that parallels the rapid economic growth in the most populous developing countries. But another key reason for the sharp price shifts is government policies that encourage biofuel production—

particularly in the United States where ethanol feedstock is now the highest value use for maize. Some argue that world agriculture is now at a turning point, with energy and climate change redefining the world food equation.

Without getting into the debate about turning points, what is clear is that global agricultural systems are going to be asked to increase on-farm productivity and output of staple crops to meet the emerging demands of bigger populations, economic growth and the biofuels sector. This is at a time when the implications of climate change are becoming more apparent, competition for land and water is growing and on-farm productivity is slowing down.

At ACIAR, it is not our intention to be diverted into the biofuels agenda in a major sense. There is a legitimate research agenda in the production and conversion processes but it is not considered to be the best fit for ACIAR funding. Our agenda is to redouble our efforts to facilitate increased and sustainable production of basic food staples. Productivity of food staples is one of the keys to growth. Doing it on a sustainable basis is another. As it is, cereal production will have to increase by nearly 50% by 2030 to meet projected food demand. Added to this is the growing demand for agricultural feed stocks for biofuels. The pressure to increase supply is more apparent than ever.

Looking ahead

The challenges are stark. Climate change, environmental degradation, rising competition for land and water, and higher energy prices are just four of these. At ACIAR, we will ensure that our joint efforts with partner countries continue to be focused on key challenges where the likelihood of success from research investment is high. This agenda will be tailored to the individual needs of partner countries and the scientific capacity of agricultural research institutions here in Australia and the group of International Agricultural Research Centres that ACIAR funds.

We are not the solution to every problem and we are not in the business of radically resetting our programs in the light of these challenges—however tempting that might be. Our primary concern is about expanding food production in line with the joint country priorities of Australia and our regional partners in the context of these challenges. That basic need has not diminished—it has just become harder to meet. To do that we will continue to help partner countries strengthen their national research systems, help narrow the income and productivity gaps between favoured and less-favoured regions, encourage private sector participation in the research adoption continuum where that makes sense and ensure that the contribution of women on smallholder farms is always recognised and maximised.

With the ACIAR team

ACIAR is continuing to play a vital role, entrusted with around $60 million of Australian taxpayer funds in 2006–07. Its responsibilities are significant, and in some sense, onerous. But it is also a real privilege for the ACIAR team to try and help make a substantive difference in the livelihoods of those in our neighbouring region. As a wealthy country, we have that obligation.

2006–07 has been a challenging year for ACIAR staff. The expansion of our program in Indonesia and our scholarship program are but two initiatives that have required extraordinary efforts. We have also consolidated significant programs in Pakistan and East Timor, among other work across the spectrum of our work.

Our special thanks go to the ACIAR team and our research partners overseas and in Australia. Their efforts are unsung but hopefully this Annual Report provides a glimpse of their dedication and joint contributions.

Dr Meryl Williams
Outgoing Chair

Mr Peter Core
Director/CEO

Research Program Managers—at 30 June 2007

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ACIAR turns 25

ACIAR celebrated its 25th birthday on Wednesday 10 May 2007

The Year in Review
Regional Achievements

Papua New Guinea and the Pacific

Financial year	Regional expenditure	Percentage of total bilateral expenditure	Board target as percentage of expenditure
2006–07	$7,487,425	21.6	>20%
2005–06	$6,863,591	22.4	>20%
2004–05	$6,332,358	22.5	>20%

ACIAR's programs cover five regions. Papua New Guinea and the Pacific Islands are grouped as one region. Outlays for the region have been rising in recent years to meet the priorities placed on the region by the Australian aid program. For the region an expenditure target of more than 20% of our overall annual bilateral research expenditure has been set.

Papua New Guinea

Active projects in 2006–07	54
AOP budgeted expenditure in 2006–07	$4,735,720
Actual expenditure in 2006–07	$4,797,959
Expenditure in 2005–06	$4,704,653
Expenditure in 2004–05	$4,226,822

Dr Jacqui Wright, ACIAR Country Manager, PNG and Solomon Islands

Key performance indicators	Performance 2006–07
Enhanced focus in project portfolio on improving the quality of commodities	Six new projects have strong emphases on processing quality: four new forestry projects concerned with wood-quality improvement; one on sweet potato marketing and postharvest handling; and one targeting increasing pyrethrum content of harvested flowers.
Maintain linkages between at least three ACIAR projects and three AusAID-funded Agricultural Innovations Grant Facility (AIGF) projects	ACIAR projects maintained links with AIGF projects on coffee growers/farmers production and marketing groups; management of potato late blight; and on enhancing the capacity of village extension workers and farmers to improve income from horticultural crops.
Greater involvement of PNG University of Technology (UNITECH) in ACIAR's program	An ACIAR scholarship scheme has been implemented to allow PNG nationals to undertake postgraduate training in-country while linking to ACIAR projects. UNITECH is also now directly involved in six ongoing ACIAR projects.
Increased emphasis in ACIAR portfolio on sweet potato research and development, commensurate with its importance as a staple food	A comprehensive portfolio of projects has been developed focusing on production and marketing of sweet potatoes, addressing pests, soil constraints, varietal selection, nutrition, marketing and postharvest technology.
Potential role of indigenous nuts in local economies defined	Key issues involved in the domestication and commercialisation of indigenous nuts and fruits of PNG were examined. Nearly all the farmers interviewed indicated a desire to grow more nut trees than they currently do, in particular for the generation of income. A new project is identifying and propagating superior nut cultivars, and developing a marketing strategy.
Extent of soil fertility decline of PNG highlands quantified and suitable research and development investments to improve soil fertility implemented	The extent of soil fertility decline and major constraints to production of the most important staple, sweet potato, were identified. The project was initiated to investigate improved nutrient and water-management options.
A major thrust to consolidate the development of inland aquaculture, with increased geographic coverage and new attention to promising indigenous species	A national meeting was held that brought together key stakeholders in the industry to discuss opportunities. A strategic industry planning exercise will be driven by the National Fisheries Authority with technical support from ACIAR. A new project on the culture of indigenous fish species is underway in Western Province.

Fingerling production and supply to inland fish farmers significantly improved in quantity and quality	A mid-project review was undertaken and remedial action agreed with key agencies to address problems encountered with fingerling production and project delivery at Aiyura Highlands Aquaculture Development Centre and at Erap.
Forty percent of new projects designed to have significant farmer or policymaker impacts within five years of completion ('Category 1')	Five out of six small research activities and two out of six new full projects are ranked as Category 1.

Position

Papua New Guinea is one of ACIAR's most important partners. ACIAR's investment and commitment in PNG reflects the deep, long-term relationship between the two countries. Overall, PNG is one of Australia's largest development partners. Australia is committed to seeing PNG develop and prosper. ACIAR's program in PNG has endeavoured to reflect this and over recent years the portfolio has increased significantly. Since 1998, ACIAR and AusAID have worked and continue to work together to develop and fund a set of projects of mutual interest, through a Record of Understanding that provides funding of $2 million annually for support of bilateral projects. In 2003, AusAID established the PNG Agricultural Innovations Grant Facility (AIGF) which supports small projects in PNG agricultural research and extension institutions. Some of these projects relate to previous or current ACIAR-funded projects at these institutions. ACIAR will link closely with the new AusAID-funded PNG Agricultural Research and Development Support Facility, programmed to commence in 2006–07.

PNG faces some formidable challenges to its agricultural development. It is a net food importer with high population growth rates. Village-based agriculture supports 70–80% of the population, and domestic trading of fresh produce is a very important source of cash income. By far the most important crop in PNG is sweet potato. Other root crops are also important but well below sweet potato. The main cash crops in order of export value are oil palm, coffee, cocoa and coconuts.

Project workers and villagers inspect new lalekens (small paddocks) that enhance traditional village-based food production systems

Domestic trading of fresh produce is a very important (and often under-recognised) source of cash income. Domestically marketed food is second to oil palm in value to the economy. Forestry is PNG's third largest revenue earner and a major contributor to the overall economic and social development of the country. The PNG fisheries zone of 2.4 million square kilometres is the largest in the South Pacific. The fisheries zone includes an extended reef system, numerous islands and an extensive coastline. These create huge opportunity but also present an enormous challenge for monitoring and control. The total market value of the PNG catch is estimated at $140–160 million.

ACIAR's program recognises the many challenges to agricultural development in PNG, including poorly developed infrastructure, weak market signals and

services, poor product quality, population pressure and future impacts of HIV/AIDS on the farming sector. Major changes to the rural environment over the last decade include greater exposure to global markets, devaluation of the kina, pressure on land and renewable resources as a result of population increases, and new pest and disease threats. These mean that as well as making a greater commitment to the implementation of the results of research, the need for ongoing development of agricultural technologies remains strong.

ACIAR has funded some highly successful projects in PNG. Examples include control of the plant pest banana skipper and identification of the pheromone of cane borer (enabling its numbers to be monitored in the field), research on halting the spread of bee mites in PNG, conservation of indigenous plants, and management of the tuna industry. Much effort has gone into efficient use of available resources for sustainable crop/food production and supporting policy development for PNG's food security. PNG needs further support to strengthen existing R&D facilities and activities. It is therefore crucial, when designing projects, to include training and packaging of research results in a form suitable for uptake by farmers.

Achievements

ACIAR's PNG program continued to emphasise research and development within four programmatic themes:

- applied research aimed to maintain and enhance smallholder incomes, with an emphasis on root, plantation, agroforestry and horticultural crops and aquaculture, and effort to place these in a social and economic context, particularly with respect to involvement of women farmers
- sustainable management of land, forestry and fisheries resources
- biosecurity
- institutional capacity building, socioeconomics and project assessment, through development of human and physical resources.

In attempts to enhance smallholder incomes from agriculture, a project has aimed to improve the **marketing system for fresh produce** of the highlands of PNG. It has mapped the supply chain from the highlands to the coastal markets, and this valuable new knowledge reveals how consumers form their preferences in the formal market in PNG. A more comprehensive picture of the work is provided on page 24. This project and others have sought ways to lift the participation of youth and women, for their own benefit and also to improve productivity of commodities such as vegetables, peanut, cocoa, coconut and oil palm.

Relationship to the AusAID PNG strategy

AusAID's program supports broad-based sustainable economic growth in PNG by working with PNG government agencies and systems to ensure better use of PNG's own resources to strengthen economic management, deliver essential services and improve law and order. The importance of strengthening political governance, building sustainable government institutions, exploiting opportunities to stimulate sustainable economic growth and maintaining service delivery is recognised.

ACIAR's PNG program, which is delivered with significant long-term AusAID co-funding, supports the emphasis on fostering economic growth by working with PNG government agencies and systems. Partnership with PNG public and private-sector institutions in agricultural research and development supports better use of PNG's own resources. With over 85% of the population in rural areas, development of agricultural industries and the smallholder cash economy is critical in stimulating sustainable economic growth and in maintaining service delivery.

During the year progress was made in finding how to improve the capacity of **research and extension services in the cocoa sector**. Two public seminars held at the Cocoa and Coconut Institute (CCI) and with the Cocoa Board in East New Britain (ENB) outlined the results of smallholder socioeconomic studies and proposed recommendations to improve research and extension services. For example, New Guinea Island Producers (NGIP) of New Britain is servicing smallholders in ENB by providing planting materials, tools and extension advice. Thus, rather than limiting its activities to buying cocoa, as has been the case in the past, the company is now becoming more involved in supporting smallholders to raise productivity and increase or rehabilitate the area under cocoa production.

A project to facilitate farmer adoption of **new management strategies among cocoa smallholder farmers** through on-farm participatory action research (PAR) and village-based extension was disrupted by the discovery of the destructive cocoa pod borer (CPB; *Conopomorpha crameriella*) in ENB. The PNG Government declared a national state of emergency, resulting in a large-scale monitoring and eradication program. Despite the significant disruption caused by the CPB to this project, project activities and outcomes continued. An on-farm PAR-based approach termed Integrated Pest and Disease Management (IPDM) is being promoted to assist the adoption of the management strategies. Initial indications suggest that many people are adopting them, particularly when they see the impact of the management changes. They are also learning to keep records of yield and disease levels in their cocoa blocks.

There has been a strong focus on **quality improvement and marketing enhancement for peanuts**. Large-scale multiplication of selected varieties took place at Ramu Sugar to facilitate seed supply for on-farm trials. Eighteen trials in the Eastern Highlands, Upper and Lower Markham Valley, undertaken in collaboration with local farmer groups, evaluated new varieties and

Smallholder vegetable farmers have increased production through improved pest and disease management

management practices on farmers' fields. Active participation of researchers and farmer groups strengthened linkages between the two groups, and substantial yield benefits were observed from the combination of improved varieties and improved practices across all sites. The improved varieties also proved more drought-resistant.

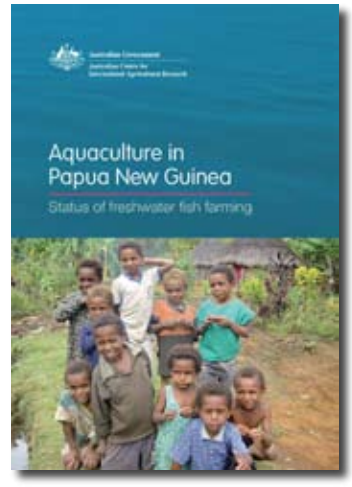
A survey conducted on the **role of women in peanut production** in Lower Markham Valley showed that peanuts contribute 75% of total household income and women in the Lower Markham have two major roles in decision making—one relating to cropping (i.e. crop and variety, time of planting) and the other related to childcare. Women also play a major role in sourcing peanut seed, weeding, marketing and planting.

Efforts to lift **supply and quality of coffee** have been successful. A survey of the industry from farmer producer through processor, trader, buyer and consumer yielded a wealth of information that a research team then analysed to determine margins at each stage along the marketing chain. The team found that, for green bean, growers with reasonable access to traders and processors (and therefore not hindered by high transport costs) were receiving reasonable prices. The team recommended that growers in reasonable proximity sell their main crop (May to July) directly to mills as ripe cherry, which would lead to a final product equal to top estate coffee.

A second, lighter crop around December–January was better processed by the farmers themselves, stored at home and used like a bank account to generate funds for immediate needs. The beauty of this arrangement is its harmony with Melanesian village life.

Inland aquaculture is regarded as a highly promising enterprise for villagers. In October 2002 fish farmers first received the genetically improved farmed tilapia (GIFT) strain of *Oreochromis niloticus* from the Highlands Aquaculture Development Centre at Aiyura in Eastern Highlands Province. This fish is a popular choice because of its ability to grow rapidly and produce fingerlings in earthen ponds. An ACIAR project is developing commercial and farm-made feeds for tilapia and also the giant freshwater prawn (*Macrobrachium*) in PNG and Fiji. The project team has reviewed the suitability of available ingredients (with their content analysis and costs), assessing aspects such as reliability of supply, cost, nutritional value and consistent quality, in order to formulate optimum low-cost diets. The project nutritionist has produced a basic feeds brochure for use by aquaculture extension officers and farmers in the participating countries and other Pacific island countries.

The PNG Feed Formula was used successfully in a mini project involving cage **trials for culture of tilapia** at Yonki Reservoir in the PNG highlands. A new ACIAR project, *Increasing capacity for regional fish feed manufacture in Papua New Guinea*, has been developed as a result of these trials. In 2007 ACIAR also published a monograph, *Aquaculture in Papua New Guinea: status of freshwater fish farming*, outlining the issues facing the country and prospects for advancing village-based inland aquaculture.



ACIAR's strong focus on sustainable management of forestry and fisheries resources continued. One project undertook a **review of portable sawmills** in both PNG and Solomon Islands. Small-scale milling technology has allowed owners with rights to community forests to harvest from

their own allotments, for their own purposes, in a way that was intended to maintain the resource for the long term. A project commissioned to examine current operations, define success and guide the further progress of portable mill technology sent an expert group on a 2-week visit to small mills in PNG.

The group concluded that problem areas were in the social, economic and regulatory fields, not in sawing technology, which had been mastered quite well. Of particular concern was the poor regulation of small mill operation—mills harvesting less than 500 cubic metres per year were completely unregulated. Thus the legal position needed urgent revision. The formation of a Portable Sawmill Owners Association was recommended, for advice when recasting the regulations and to introduce some degree of self-regulation of activity.

Excellent progress has been made in activities to increase the availability and use of **improved germplasm for forestry and agroforestry** in PNG. In its second year of operation the project has focused on a range of species including sandalwood and teak. Seed orchards and clone banks (to enable rapid vegetative propagation of desirable species) have been established. Project partner organisations, in particular the Foundation for People Community Development (FPCD), provided six village communities with training in how to establish village nurseries. Each trainer has conducted follow-up training to reinforce and evaluate the implementation and impacts of nursery skills within their respective villages.

ACIAR is committed to assist the sustainability of fisheries around PNG. Active projects include a survey of the biology and status of the **prawn stocks and trawl fishery** in the Gulf of Papua, and an assessment of the impact of the PNG purse seine fishery on tuna stocks. The **PNG tuna fishery** is the largest in the Pacific Islands region, and is based on total allowable catches allocated by species

Fish sellers at Lae market, Papua New Guinea

type (skipjack, yellowfin and bigeye tuna) and gear type (purse seine and longline). Tuna stocks appear to be declining, due in part to the use of anchored fish aggregation devices (FADs). The project team is providing information on tuna population dynamics and determining how FADs impact on the fishery.

Currently tuna stocks appear to be exploited at maximum levels of sustainability. PNG has a better chance of sustaining its tuna fisheries if it can encourage domestic fishing in the country's exclusive economic zone and phase out fishing by other nations. Responsibility for managing the fishery rests with the National Fisheries Authority, and it needs a framework to determine whether or not substituting domestic activities and the consequent loss of fees from other nations will confer net benefits to the economy. As part of this strategy an ACIAR project recently completed a survey to determine the labour cost component at a domestic cannery.

PNG must deal with a wide range of pests and diseases that affect both plants and animals. One particular scourge is **potato late blight**, which wiped out potato production in 2003. The favoured variety Sequoia is highly susceptible to the blight and, in order to keep the plants alive until maturity, the crop must be sprayed every 3 to 5 days with fungicides. Such an intensive regime may

Fungicide application is helping control potato late blight in Papua New Guinea

be too much for 'subsistence' farmers, who once relied on potatoes as a valuable cash crop. This situation will not change until late-blight-resistant varieties are available. An ACIAR project aims to provide a consistent and assured supply of seed potatoes of current and new varieties for the market place. It has supported tests of several potato varieties developed by the International Potato Centre in Peru (CIP) that have proved to be very resistant to the blight. A tissue culture laboratory at Aiyura is being prepared to produce high numbers of quality potato plantlets as a forerunner of blight-resistant Certified Seed Potatoes.

Sweet potato is the mainstay of PNG's food security and accounts for 63% of the dietary energy of the population. Climatic factors such as El Niño events can cause major but temporary falls in production but, aside from this, farmers and scientists have noted a gradual decline in yields and the quality of tubers for no obvious reason. This decline has implications for food security and an ACIAR project is seeking solutions. The project, which aims to assemble better performing, disease-resistant germplasm, is introducing progeny-tested material from Australia or other sources. Viruses affect productivity, and the researchers are performing preliminary identification of virus and virus-like diseases. Aphids are common vectors of sweet potato viruses, and two aphid-proof tunnelhouses (igloos) have been imported—one to be used to propagate virus-free sweet potato cuttings, the other for virus indexing. The project is profiting from advice from CIP on virus detection and also directions for using tissue-cultured plants in heat treatment for virus removal (in-vitro thermotherapy).

The weed '**mile-a-minute'** (*Mikania micrantha*) has the capacity to smother food crops. A project is evaluating biological control through natural weed predators, based on known agents trialled or in use elsewhere. Another project is looking to control a planthopper, *Eumetopina flavipes*, that earlier ACIAR work had identified as the vector of ramu stunt disease of sugarcane in PNG. This new research is developing an integrated pest management program for its control.

At present the main pest to coffee in PNG is **coffee green scale**. A project researching the best means for its control has taken the work of ACIAR socioeconomic researchers into consideration, because they have provided insights into the type of pest management acceptable and sustainable by smallholder growers. This is helpful in guiding development of the project's control packages. As well the team's work has discovered the serious threat posed by **coffee berry borer** (CBB). Although not yet present, it is just beyond the PNG border, and its arrival will mean that all farmers except those at the highest altitudes will have to invest more time in their crop if they are to get any sort of return from growing coffee.

Efforts continued to build up PNG's institutional and individual capacity. ACIAR finalised its project to introduce science communication in PNG. The '**SciCom' project** developed an applied accredited postgraduate course in scientific communication, and developed the capacity of universities and their staff to deliver and manage the courses. Three PNG universities now have accredited postgraduate courses based on the developed module

UNITECH graduation ceremony in April 2007. Left to right—James Butubu, Brian Takaboy, Amos Top Uriningi, Ronnie Datoana, Gure Tumae, Peter Amatus, Prof. A. Halim, Dr Jacqui Wright, Nicholar Boas, Bandy Keponge Yombo, Densley Tapat

The **ACIAR Scholarship Scheme** was initiated in the Department of Agriculture at UNITECH at the beginning of the first semester in March 2005. Six scholars initially undertook postgraduate studies, studying topics such as the economics of peanut production, fish nutrition, fresh produce storage systems, yield decline in sweet potato, viral diseases of taro and host resistance to the sugarcane borer.

A further seven scholars started postgraduate programs in March 2006, undertaking studies with peanut farmers, researching the incidence of leptospirosis in local cattle, developing sources of traditional feed for pigs and fish (tilapia), genotype x environment interactions in taro, studies of vesicular streak disease of cocoa, and virus detection in sweet potatoes. In the process of providing support for these scholars, a postgraduate computer laboratory was established and research funds supplied, which permitted some upgrading of existing research facilities in the department. In addition, all graduating scholars gained immediate employment in industries, research institutions and universities.

Advancing the

Growers in the PNG highlands region can produce an amazing variety of high-quality temperate-zone vegetables year-round. They thrive in the mild climate and rich volcanic soils, and this bounty could meet the needs of PNG's populous coastal cities and maybe also supply overseas markets. For these reasons ACIAR commissioned a project back in 1983 that sought to find ways of developing a marketing system for highlands produce.

The project team assessed transport methods and also studied factors affecting produce shelf life. Project team members Dr Kevin Scott, from the NSW Department of Agriculture, and Garth Atkinson, a New Zealander working with the PNG Department of Primary Industry, produced an ACIAR Technical Report (No. 14) outlining prospects for developing a marketing chain from the highlands to populated coastal areas. That project's major achievements were to design a suitable refrigerated container,

vegetable trade out of the PNG highlands

and complete the testing of vegetable transport and handling from the highlands to Port Moresby, using road containers between the highlands and Lae, followed by ship to Port Moresby.

In 2001, during a visit to PNG, ACIAR program manager Dr Ken Menz observed that this system had been taken up commercially in Mount Hagen in the highlands, and had been operating for a number of years without government support. It was a major supply channel, competing with air freight and non-refrigerated surface transport. Aware of this success, the Fresh Produce Development Agency (FPDA) (a government instrumentality) wanted to encourage more operators into the business, but it was not simply a matter of slotting them in. The marketing system needed a holistic appraisal from the viewpoints of all its stakeholders before it was ready to expand.

Thus, in 2003, ACIAR commissioned another project, led by Professor John Spriggs of the University of Canberra.

This time the research focused on socioeconomic change, involving all the people along the chain. The project's major aim was to help the stakeholders—representatives from along the supply chain including farmers, wholesalers, community associations, supermarkets, transporters, government agencies and researchers—come to the best decisions with regard to marketing highlands fresh produce. Through a process known as 'critical action research' stakeholders had opportunities to learn from the results of research conducted by the project team. They were also encouraged to contribute at project workshops and to become directly involved in the action plans drawn up for marketing system development and further research.

It became evident that there was a strong call to develop the physical infrastructure for marketing fresh produce. The stakeholders strongly supported the establishment of consolidation depots in the major highland centres of Goroka and Mount Hagen, served by satellite district depots in the surrounding production regions, and efforts have begun to put these in place. Attention is also being given to developing a quality-management system for the produce.

Village extension workers performed a valuable role. These are full-time farmers who act as conduits of technical and market information from the FPDA and other sources to farmers, and also relay production information from the farmers back to the FPDA. This process opened the eyes of farmers to the reality of markets previously unknown to them.

The marketing trials have also opened up opportunities that should lead to more young people staying on the land. They may also attract new people into farming to commence productive use of their land, and give existing farmers a reason to expand production.

Pacific Island countries

Active projects in 2006–07	42
AOP budgeted expenditure in 2006–07	$2,468,344
Actual expenditure in 2006–07	$2,689,466
Expenditure in 2005–06	$2,158,938
Expenditure in 2004–05	$2,105,536

Dr Jacqui Wright, ACIAR Country Manager, PNG and Solomon Islands

Key performance indicators	Performance 2006–07
Agricultural systems policy options to secure trade liberalisation opportunities (including domestic adjustments) developed for at least two countries	A model for the Fiji economy was tested, evaluated and used to perform a range of policy simulations and related options to securing trade liberalisation. The results of this work have been communicated to stakeholders and the academic community through a range of working papers. Economic models have also been used to analyse policy options facing Pacific countries in relation to maximising the economic benefits from the management of migratory tuna stocks.
Design and commence two new forestry projects with linkages to value-addition through processing	Projects commenced will develop commercial processing methods and provide technical information to underpin the manufacture and acceptance of coconut wood in the high-value flooring market. They will also develop approaches to maximise wood quality and value in Vanuatu's emerging whitewood plantation industry.
Delivery of improved nutritional information for consumers and extension providers	A series of food health and nutrition fact sheets covering 18 crops have been produced and distributed to growers, consumers and extension workers in Samoa and other Pacific nations. Sweet potato cultivars are being evaluated to improve vitamin A status.
Progress the sustainable management of Pacific fisheries through completion of at least two studies on stock replenishment and re-establishment	Restocking of trochus shell broodstock in Samoa has demonstrated partial success, with a small number of juvenile recruits on the release reefs. Establishment of management regimes for sea cucumber resources in Solomon Islands have been hampered by social and political developments. Hatchery-produced black-lip pearl oyster shell was restocked onto local reefs in Kiribati.
Demonstrated capacity-building achievements through effective partnerships and dissemination plans on all projects	Plans are included in all projects.
Develop farmer group testing of at least three integrated crop management packages	Integrated crop management packages in taro in Solomon Islands, ginger in Fiji (HORT/2004/049), brassica crops in Fiji and Samoa, and sweet potatoes in Solomon Islands and PNG are being tested by farmer groups to foster sustainable crop production under high stress, pest and disease pressure.

Relationship to the AusAID PNG strategy

AusAID's Pacific Regional Aid Strategy 2004–09 states that 'Australia will continue to work cooperatively with Pacific Regional Organisations to support their improved effectiveness and impact in the region….' It identifies 'stability as the fundamental underpinning factor of development, by supporting a strong policy and economic environment and strengthening the drivers of economic growth'. There are four regional themes, including stronger broad-based growth (improving economic competitiveness as well as expanding the productive sectors that drive broad-based growth, with a focus on providing income generation and employment opportunities and sustainable management of the environment); more effective, accountable and democratic government; improved law and justice and security; and enhanced service delivery. There is also a commitment that an increased proportion of assistance will be focused on the countries of Melanesia.

ACIAR's Pacific program assists this strategy, particularly the first thematic area of broad-based growth. It recognises that agriculture and fisheries (along with tourism and remittances) are the main sources of income for many Pacific countries, but that there is a need to secure the production of major existing crops and fishery products as well as to explore development of potential new niche farm, fisheries and forestry products. The program has a strong emphasis on marketing to support the twin roles of agriculture for income generation as well as food security. Work on agricultural policies and quarantine assists with the first two objectives. The ACIAR program also has a strong emphasis on working with Pacific regional organisations (such as SPC, FFA and USP) to improve their effectiveness in agriculture, fisheries and forestry. Over the last three years an increased percentage of the ACIAR budget is being invested in Melanesian countries.

Position

ACIAR's program with the Pacific islands will continue to develop in line with broader Australian foreign-policy and development-assistance priorities. The long-term development challenges of the region depend heavily on the potential of agriculture, fisheries and forestry for economic growth. The sustainable management of these resources, while also raising producer incomes, remains a central focus of ACIAR's research agenda. In this context, sound locally owned policies and practices will be further developed. The development of an agricultural-enabling environment, including training, extension, land tenure and suitable production systems for primary-industry sectors that are often under-performing, is an ongoing objective.

Agriculture and fishing comprise a majority of the livelihoods for Pacific islanders. Many smallholders live in isolated rural communities dependent on household food production and intermittent crop, fish and small livestock sales. Improving and transforming these systems into an income-generating activity through improved productivity and marketing will enhance self-reliance and reduce poverty over time.

Commodity exports include sugar, fruit and vegetables, vanilla, pepper, kava, hardwood logs and timber, softwood timber, fish and other marine products. Substantial income is also gained from foreign vessel access fees to fishing grounds within each country's exclusive economic zone.

Many of the limiting factors for sectoral growth and development of Pacific island countries will continue over the medium and even long term. These include small size, physical isolation, limited natural resource base, inadequate communications infrastructure, aid or remittance dependence of many economies, limited opportunities, human development constraints, lack of competitiveness in a global trading

environment, high population growth, and the challenges of environmental degradation and resource depletion.

One of the four key themes of the Australian Pacific Regional Aid Strategy (2004–09) is to promote stronger broad-based growth, including 'strengthening the enabling environment for public sector development... improving economic competitiveness...with a focus on providing income generation and employment opportunities and sustainable management of the environment'*. ACIAR's Pacific program aims particularly to underpin this theme of the strategy.

Participation in regional or multi-country programs, and projects that address common problems, will help to overcome constraints including lack of capacity of many countries to engage in collaborative activities. Projects must also be designed to meet the risks associated with institutional and staff resource limitations. ACIAR specifically encourages the involvement of International Agricultural Research Centres (IARCs) in the region.

Achievements

The main Pacific island countries (PICs) involved in ACIAR research are Fiji, Solomon Islands, Vanuatu, Tonga, Samoa and Kiribati. Much of the program in the Pacific is delivered through regional organisations, but ACIAR recognises that in some instances these nations have different priorities and requirements. It therefore continues to support a limited number of single country-specific projects on major issues. In 2006–07 ACIAR's Pacific program focused on four themes:

- improving incomes through more productive farming systems
- sustainable management of forestry and fishery resources
- biosecurity and pest and disease management
- farming systems economics and marketing.

The horticulture industry has potential for many Pacific communities. In Tonga the leading horticultural export is squash, earning $10.8 million in 2002. Squash is quick and easy to grow with a lucrative market in exports to Japan. A project is in progress to improve **field-based crop protection and market quality of squash** by addressing pests and diseases such as powdery mildew, silver leaf whitefly and virus diseases—also to better manage weeds. Trials in 2005 and 2006 in Tonga and Australia showed that using environmentally friendly chemicals was just as effective in controlling powdery mildew as using traditional fungicides. The researchers screened weed species and other cucurbit crops in the search for alternative hosts for viruses and, using ELISA tests, they identified two weeds that carried two virus diseases affecting squash. This led to the

Evaluation of superior vegetable varieties for Solomon Islander smallholders

*Source: Commonwealth Government: Pacific Regional Aid Strategy 2004–2009, AusAID 2004.

recommendation of weed control around squash plantings as an important aspect of virus control.

In Solomon Islands both the farming and research communities lack resources to address the many pests and diseases they encounter. A project is helping to develop **integrated pest management (IPM) strategies for major food crops**, and also to increase the awareness among government staff and the community about plant pests and diseases, leading to improved and sustainable crop management. Pests and diseases under study include a chysomelid beetle that damages the popular local vegetable 'sliperi kabis', the lethal virus disease alomae found on taro grown in Malaita for the Honiara market, diamondback moth infestation of water cress grown at Mamara near Honiara, and gummy stem blight, a serious fungal disease of watermelon. The project is also surveying vegetable growers supplying the Honiara market, to ascertain their use of pesticides. This is part of the move to increase awareness and understanding of plant pests and diseases among government staff and the community that will help to improve pest management and sustainable crop production.

Soil-borne pathogens affect ginger in Fiji and Australia. During May and September 2006 disease and pest surveys were carried out in Fiji with a particular focus on such pathogens. Farm and factory inspections revealed damage caused by fungal rots and nematode infestations. Quality of planting material is a significant problem for both the Fijian and Australian ginger industries. Tissue-cultured plants are being multiplied and several farms in Australia have been established as 'clean seed' producers. Their planting material is in demand. Fiji has also experimented with 'clean seed' schemes in the past and is keen to reintroduce such a program. The project is supporting these industry-led initiatives by provision of tissue-cultured stock material.

In the Pacific islands both large and smallholder farmers grow **brassicas—mainly head cabbage, Chinese cabbage and watercress**. Increasing production in recent years has opened opportunities for diamondback moth infestations to spread. Control is gained through the use of insecticides, but the moth is best tackled through integrated pest management (IPM) that limits insecticide use while maintaining control. A project is encouraging the adoption of IPM, tailoring appropriate packages to each country. Regional surveys (on farms and research stations) are underway to determine the key insect pests of Brassica crops and their associated natural enemies. The work will continue until May 2008 to build up a substantial inventory. Local scientists have been trained in survey techniques and insect identification. The project schedule includes participatory trials to demonstrate the elements of effective brassica IPM, and the development of a 'farmer field school' approach to educate community and farmer groups and extension officers. Selective plant-protection products, for example a formulation extracted from the Neem tree, have been sourced and transported to Fiji and Samoa for testing. An IPM toolkit developed through the project is also being tested.

In Solomon Islands, a project is developing improved systems of **village-based poultry production** by identifying rations for village-based layer and meat birds based on locally available feedstuffs.

Peri-urban production of Chinese cabbage

A poultry farm training site, Solomon Islands

At the SI College of Higher Education (SICHE) maize, sorghum, mung beans and pigeon peas were planted on campus to demonstrate the potential for villagers to grow these as feeds for poultry. The crops were harvested, dried and stored for nutrition trials. A 16-pen poultry research facility was constructed and commissioned. Test diets comprising different mixes of components such as sorghum, pigeon pea and locally available fresh coconut and paw paw leaves and fruit were evaluated. The project team is interacting with farmers and farmer groups to trial the diets and gather feedback about the value of these rations. A survey of 90 village poultry farmers in 31 villages from Guadalcanal, Western Province, Malaita and Central Province gave cause for optimism. The team found that most farmers considered chickens were easy to care for and a good enterprise for providing cash income and extra food for the family.

The project to detect **nutritional disorders of yams** has concluded, having provided diagnostic information for nutritional problems of major yam species in the field and laboratory in PNG, Tonga and Vanuatu. It developed and evaluated strategies to improve yam nutrition in low-external-input systems and, in addition, it addressed many of the problems associated with yam nutrition research, providing future researchers with a much sounder methodological base. One item of significance was the discovery that yams, and particularly *Dioscorea esculenta*, showed particular susceptibility to deficiencies of manganese. In the Tonga program, where soils are highly phosphorus-fixing, *D. alata* crops responded well to phosphorus fertiliser applications. With phosphorus alleviation, yield increases of 30–100% were obtained, providing attractive economic returns for farmers. Instead of fertiliser, the planting of a green manure crop was found to contribute substantial nitrogen and phosphorus to subsequent crops.

Yam production has increased in Vanuatu through better plant nutrition

Disease-free, good-quality waters, combined with low labour costs, make aquaculture a potential success in Pacific communities. A project team is working with the Secretariat of the Pacific Community (SPC) and Pacific communities to identify and implement **targeted research on aquaculture**, extending the outcomes of past ACIAR and WorldFish Center projects. Together they have developed a series of mini projects, and one of these has undertaken a preliminary investigation into the potential for aquaculture of *Macrobrachium lar* (an indigenous giant freshwater prawn species) in the Pacific region. Trial farming of this species took place in Vanuatu (monoculture) and Wallis & Futuna (integrated prawn–taro farming). The project exhibited high survival rates and successfully grew *M. lar* to commercial size in four months in both countries. The farmers accepted the culture techniques well, indicating the suitability of this species as a new aquaculture commodity, but there seemed little advantage in integrating freshwater prawn farming with taro crops. The enterprises gave a good return; Vanuatu farmers for example received a price of $10/kg from restaurant owners.

Another project (already mentioned from a PNG perspective) aimed to review the availability and cost of **local feed ingredients** for tilapia and to a lesser extent *Macrobrachium* in both PNG and Fiji, and to develop feed formulation tools for commercial and farm-made feeds. Feed pellets were successfully developed and trialled. From the mini project a new project 'Freshwater prawn aquaculture in the Pacific: Improving culture stock quality and nutrition in Fiji' has been developed, aimed at improving *Macrobrachium* production through improved culture stock and development of an optimum, low-cost diet. The project nutritionist has produced a basic feeds brochure to help aquaculture extension officers and farmers in the participating countries and other PICs.

Another mini project has tested the **viral-disease status of *Penaeus monodon* (black tiger shrimp**) broodstock among natural populations in the Fiji Islands. This shrimp is the most highly favoured species for aquaculture worldwide because of its fast growth rate, large size at maturity and high meat quality and quantity. The natural isolation of the Fiji Islands makes it potentially an ideal site for culturing and maintaining viral-free *P. monodon* as a basis for a regional aquaculture industry. The project was able to show that a number of important viruses are absent from Fiji. The laboratory at the University of the South Pacific in Fiji is now a reference centre for Fiji and neighbouring countries, able to provide information on which government and industry can develop policy regarding importation and export of shrimp stocks. There is a new awareness of the need to test for viruses in shrimp imported into Fiji Islands.

A forestry project aims to reduce the risk of **serious damage by exotic pests** to the valuable timber resources of Fiji and Vanuatu (as well as Australia) by establishing efficient detection systems for target pests in high-hazard sites. This is part of a 'neighbourhood watch' approach to incursion management that will benefit all regional countries, including Australia.

Australian project participants, in cooperation with the Fiji and Vanuatu collaborators, have developed a 47-page field guide, *Forest health guide: symptoms of insect and fungal damage on trees*, to aid the identification of pest and disease damage symptoms. The Department of Primary Industries and Fisheries, Queensland, published the guide in September 2006. Project collaborators received copies and received training in its use at a workshop held in Suva in September–October 2006. The guide features images and descriptions of generic types of insect and fungal damage, as well as specific information on some of the key agents targeted in this project (e.g. mahogany shoot borer, bark beetles, erythrina gall wasp and eucalypt rust). The guide also includes a list of equipment required for field surveys and a copy of the forest-health field form.

The **sandalwood project** is providing vital genetic information to ensure that trees for replanting in Vanuatu are fast-growing with excellent wood and high-quality oil, and that suitable planting conditions are in place. The project established a 'host' trial in Port Vila (sandalwood is a root parasite and must have a host of another species). Species under trial are *Canarium indicum, Casuarina equisetifolia* and *Pterocarpus indicus*. Ni-Vanuatu project participants are learning how to establish sandalwood plantings, gaining skills in nursery establishment and procedures, sandalwood propagation, plantation establishment and plant improvement. A related study is undertaking a rough census of wild sandalwood stocks in Vanuatu to provide scientific underpinning for a conservation strategy. Two new forestry initiatives involve better **silvicultural management of whitewood** (*Endospermum medullosum*) for plantation forestry in Vanuatu, and improving value and marketability of **coconut wood** in Fiji and Samoa.

ACIAR has supported the development and implementation of strategies for the effective conservation and use of the Pacific region's **plant genetic resources** (PGRs) for food and agriculture (including neglected and under-utilised species). At meetings of the Pacific Agricultural Plant Genetic Resources Network (PAPGREN) in 2004 and 2005 there was agreement on the elements of a regional strategy for ex-situ conservation. This involves developing a consistent approach for establishment of field gene banks, in-vitro preservation and cryopreservation to conserve the allotted species, and relies on effective collaboration among all stakeholders within the region and beyond. The major species of interest are taro, breadfruit, banana and coconut. To complement these strategies for staple crops, the 2006 annual PAPGREN meeting agreed on a regional strategy for the development of neglected and under-utilised crops.

Efforts continued to find ways of controlling the **invasive weed mikania** (mile-a-minute) in Fiji. A database has been established and the distribution of mikania in Fiji and also PNG is being recorded. So far surveys and herbarium records have counted over 150 sites in Fiji and nearly 50 in PNG where mikania is present and many more are expected. Potential biological control agents include the larvae of two butterflies and a rust fungus.

An economic and market analysis of the **live reef-fish food trade** in Asia–Pacific has given researchers a comprehensive picture of the key factors driving the future sustainability of this trade across the Asia–Pacific region, and provided a blueprint for governments and fishers to act on to assure future sustainability. The studies have identified four critical areas where sustainability of the trade needs improvement: 1) better governance of wild-caught fisheries; 2) sustainable development of reef-fish aquaculture; 3) integrated policies for assisting low-income fishing communities; 4) more informed consumer choices.

Another project is identifying and promoting strategies for Pacific island nations to maximise the economic benefits from their **migratory tuna stocks**. Shoals of tuna migrate through the exclusive economic zones of island nations in the Western and Central Pacific Ocean. This migratory characteristic means that no nation has control over the tuna stocks. The member nations of the Forum Fisheries Agency have long adopted a mutually beneficial coordinated regional management approach to regulate the catches of their own domestic fleets and those of distant water fishing nations. The projects outputs—economic analyses, bioeconomic modelling and policy development—are all potentially valuable aids to establishing the economic negotiating positions of Pacific island nations with rights to migratory tuna stocks, as well as the positions of the distant water fleet nations (DWFNs) such as Japan, USA, South Korea, Taiwan and China, who are interested in paying for access to the stocks.

ACIAR-funded research has improved feed quality and breeding and larval-rearing techniques for groupers

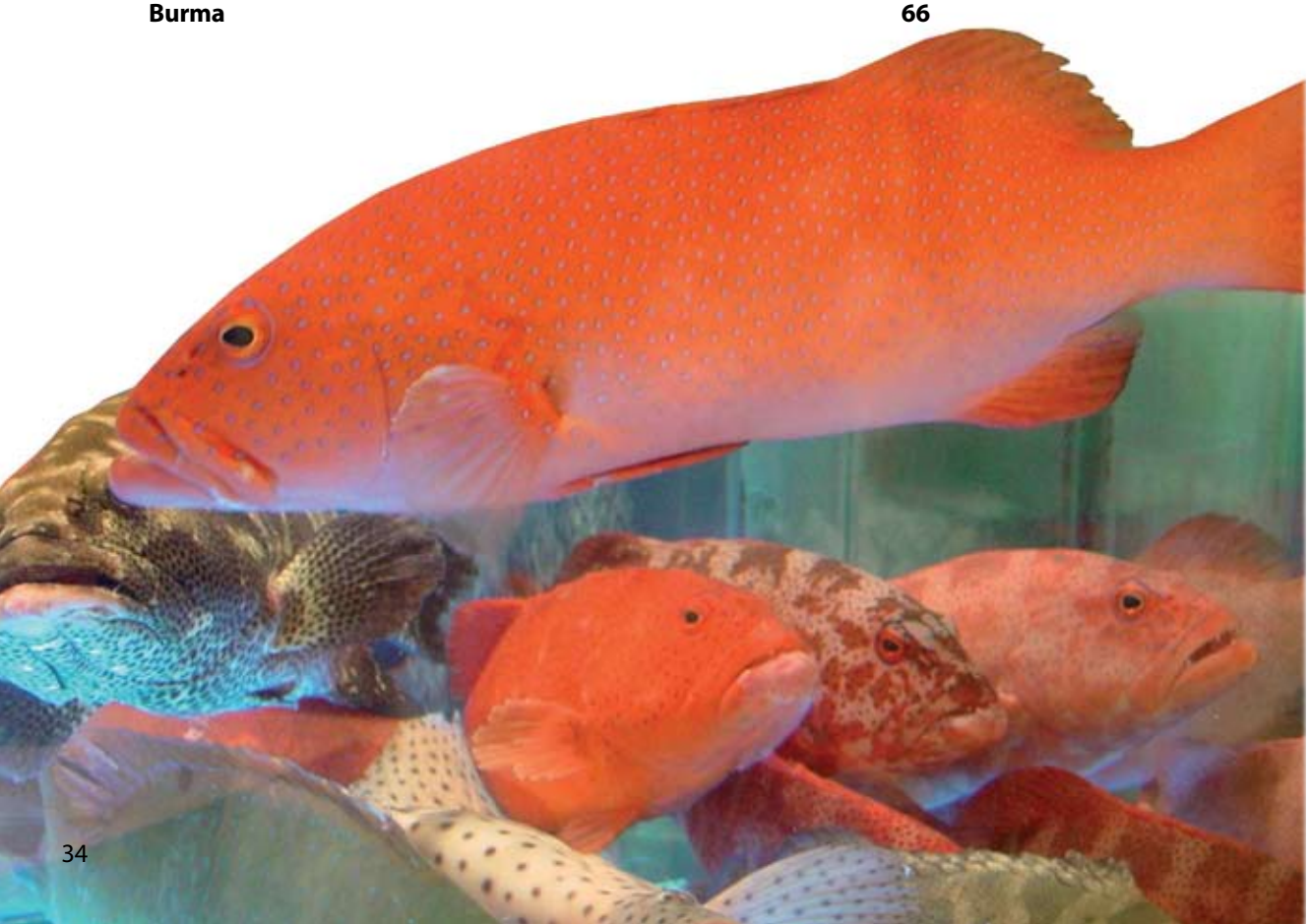
Fiji needs reliable information on rural incomes, together with agricultural and fisheries production data from the smallholder and subsistence sectors, market information on food price changes, and their effects on producers and consumers. A project is underway to collect this information and provide the tools to develop a **flexible framework for integration into broader policy development**. An early success was to obtain the agreement of the Fiji Islands Bureau of Statistics to use data from their Household Income and Expenditure Survey 2002–2003 (HIES) in the project. These data will provide the sampling frame for both the urban and rural surveys, so the project has the benefit of a recent and full enumeration of urban and rural households to work from.
One of the key priorities emerging from a Pacific Extension Summit hosted by Tonga in November 2005 was the need to build the **capacity of extension staff and associated institutions** to undertake participatory research and extension (PARE). In response, ACIAR commissioned a small R&D activity to determine the particular situation for a range of Pacific islands and different institutions. By accounting for variations in context (e.g. social and cultural differences, previous institutional experiences, farmers' needs) and differences in institutional roles (e.g. of tertiary institutions, NGO networking agencies, government extension and research staff) ACIAR and partner institutions are now in a far better position to guide the development of tailored training and capacity-building programs.

Veterinary checks for village livestock in Fiji

Southeast Asia

Financial year	Regional expenditure	Percentage of total bilateral expenditure	Board target as percentage of expenditure
2006–07	$19,395,583	56.0	>45%
2005–06	$15,885,543	51.7	>45%
2004–05	$13,030,037	46.3	>45%

Southeast Asia is the largest of the five regions in which ACIAR conducts research activities, with eight countries involved. Indonesia is, and will remain, our largest partner, both within the region and of all partner countries. For the region an expenditure target of more than 45% of our overall annual bilateral research expenditure has been set.



Indonesia

Active projects in 2006–07	76
AOP budgeted expenditure in 2006–07	$6,005,699
Actual expenditure in 2006–07	$8,825,565
Expenditure in 2005–06	$5,450,604
Expenditure in 2004–05	$4,433,281

Mr John Murray, ACIAR Country Manager, Indonesia

Key performance indicators	Performance 2006–07
Information from fisheries and soil-management projects developed in response to the December 2004 tsunami disaster utilised by other users	Technical information packages in aquatic health, extension methodology, soil chemistry and pond design have been developed and transferred to extension workers, smallholder shrimp farmers, and several donor projects. Work through the WorldFish Center to help small fishers better manage the vulnerable inshore resources being continued with USAID funding. Through cooperation with the local agricultural departments the projects assisted farmers to manage soil constraints affecting rice, peanuts, soybeans and maize on tsunami-affected land.
Major agribusiness projects for the beef, fish and vegetable industries initiated	A program of project activities under the Smallholder Agribusiness Development Initiative addressing major investments in beef was designed and initiated. Several projects in other programs were commenced to underpin agribusiness development for shrimp and potato/vegetable production.
Project portfolio on avian influenza implemented and coordinated with other Australian and international donor-funded activities	Three major projects on avian influenza in ducks and poultry have commenced and complement support from other donors (especially FAO and AusAID).
Catch monitoring and assessment data systems routinely utilised for management of tuna and other fisheries of high common interest between Indonesia and Australia	The tuna longline vessel observer program was implemented to supplement the ongoing tuna port sampling system. Port sampling was established and used to update Indonesian fishery status reports.
Forty percent of new projects designed with potential for significant farmer or policymaker impacts within five years of completion	Nine of 15 full projects and four small R&D activities agreed to meet this designation.

Position

The country's proximity and strategic importance to Australia, and the large proportion of its population in poverty but with opportunity for economic development, meant that in 2006–07 Indonesia maintained its position as ACIAR's largest partner country. Its prominence in ACIAR's program will continue. In February 2007 a series of consultation workshops were held in Jakarta to establish priorities for ACIAR–Indonesia cooperation in agriculture, forestry and fisheries for the next four years.

The regional balance of investments is influenced by Australian expertise and alignment with the Australian aid program. eastern Indonesia (including East and West Nusa Tenggara, South and South East Sulawesi) and Java and selected parts of Sumatra are equally important. In response to the December 2004 tsunami, ACIAR has commenced projects in affected communities in Aceh; some of these are in conjunction with the Australia–Indonesia Partnership. ACIAR encouraged linkages between the research agencies in agriculture, forestry and fisheries and the policy/implementation directorate-generals in the same ministries where appropriate. Likewise, ACIAR will support linkages between the research capacity in Java and eastern Indonesian and Sumatran adaptive research agencies and planning authorities.

ACIAR also emphasised Indonesia in its multilateral program, delivered in conjunction with the International Agricultural Research Centres. In Indonesia those involved are the Center for International Forestry Research (CIFOR), the World Agroforestry Centre (ICRAF), the International Potato Center (CIP) and the World Vegetable Center (AVRDC).

In 2006–07, ACIAR's Indonesia program continued to emphasise animal health and production, crop protection (integrated with horticultural crop production), forestry, fisheries and agricultural policy research, especially in eastern Indonesia. Research collaboration included aspects of crop, livestock and fish biological security, and through policy research focused on agribusiness and the implications of decentralisation for the sustainable management and development of agricultural and land resources.

Achievements

Collaborative research on crop and livestock diseases is a major emphasis of the ACIAR–Indonesia collaboration, both because of direct impacts on production but also because of the need to contain biosecurity threats.

Huanglongbing (also known as **citrus greening**) is a severe problem for growers throughout Asia. In Indonesia, scientists have confirmed that a psyllid insect transmits the causative proteobacterium from plant to plant, and they have made progress in understanding how to control greening, especially through the application of mineral oil sprays.

Rapid expansion of **cocoa production in the outer eastern provinces** of Indonesia has led to the involvement of 400,000 smallholders. Indonesia is now the world's third largest exporter of cocoa, but the industry in South and South East Sulawesi is afflicted by conditions such as cocoa pod borer, phytophthora pod rot and vascular streak dieback. A second phase of a major project, in collaboration with Indonesian industry, provincial and national government and other donors, is helping to build capability to collect, maintain and identify pest and disease resistance in different lines of cocoa, and also to determine which have the best quality characteristics. In northern Sulawesi, cloves, vanilla, sago and maize (all important domestic or export crops) suffer from what appear to be **soil-borne fungal diseases**. Progress had been made in understanding disease management strategies for vanilla stem and root rot, along with the

epidemiology of clove decline, by studying the dissemination of the fungus pathogen in the soil and the insects associated with plants affected by clove decline.

Work on disease and pest management is closely integrated with other efforts to improve crop production, quality and marketability. With other horticultural crops, major collaborative efforts are underway with bananas in West Sulawesi and Java, and chilli in Java. In another project, **potato and brassica crops** grown in rotation are under study. The Indonesian provinces of West and Central Java account for half of the total Indonesian production of both vegetables, but their yields are well below international standards, while quality of potatoes for high-value uses is variable. A project is introducing integrated crop management practices, proven in Australia and Indonesia, which will substantially lift yields. An improved seed supply system for potatoes is also helping lift productivity and quality.

With livestock biosecurity, the ongoing concern about **highly pathogenic avian influenza (HPAI) and classical swine fever** has reinforced the need for effective diagnosis, surveillance and sustainable control options. Studies are monitoring the change in the structure of the avian influenza virus to support the selection of appropriate vaccines for control programs. The role of ducks in the spread of the disease is also being investigated to develop effective means of managing the disease in that species. The economic importance of the disease will be defined to assist policymakers in resource allocation. The effectiveness of vaccination for classical swine fever is also being evaluated. This work will enhance disease-surveillance capacity through a pilot program in East Nusa Tenggara.

Avian influenza has caused serious harm to South-East Asia's tourism and poultry industries. ACIAR research is helping to mount a strong response

Infectious bursal disease in commercial poultry is an ongoing cause of deaths, reduced productivity and immunodeficiency. Current vaccines provide inadequate protection against the more virulent strains found in Indonesia. A vaccine derived from local isolates of the virus has been shown to provide effective immunity and is in the process of transfer to commercial partners.

Sustainable utilisation and management of forestry resources is a significant area of ACIAR involvement. In a project studying **community partnerships for plantation forestry**, a survey of current and potential marketing channels for sawn logs revealed a wide variety of partnership arrangements for commercial forestry, generating a mix of outcomes for growers, companies and government agencies. The project found that a high level of social cohesion in farmer forest groups was a critical requirement for improving their returns from forestry.

There is much concern about **fungal heart rots**, which threaten future establishment of acacia plantations in Indonesia. **Root rot fungi** pose another problem. A project has assessed the incidence of root and heart rots in different Indonesian environments. Australian researchers assisted collaborators in Yogyakarta in establishing DNA-sequencing methodology as a means of identifying fungal isolates.

The program strives to promote **profitable agribusiness systems for eastern Indonesia**. ACIAR implemented a **new agribusiness program** in Indonesia, in close association with the **Smallholder Agribusiness Development Initiative** (see page 40). Priorities for research investment were identified, with institutional

development and market assessments continuing throughout the year. Over 20 technical and market assessments have been designed to identify researchable issues and impact pathways with over a dozen completed. The first group of collaborative R&D projects has been designed and implemented.

One project that has been running for 4 years in eastern Indonesia is studying **better use of cassava**. This hardy root is an important crop in Indonesia, supplying food for humans and livestock, but in the past decade the country has moved from net exporter to net importer. A collaboration involving the International Center for Tropical Agriculture (CIAT) is testing high-yielding varieties of cassava for their suitability in different regions of Indonesia as well as in East Timor. Many farmers have welcomed the opportunity to trial some of the high-yielding lines on their own farms.

Other project work is helping smallholder farmers in eastern Indonesia to develop, test and apply tools and knowledge-sharing techniques to **improve Bali cattle production**. The work has involved a multidisciplinary team comprising forage, livestock, farming-systems scientists, social scientists and economists from both Indonesia and Australia. They have sourced benchmarking information from a combination of historical village records, interviews with both farmer groups and individual farmers, and the 'expert knowledge' of staff from the collaborating extension and development agencies.

ACIAR research allows farmers better feeding options for their livestock

All this information has been supplied at farmer workshops, giving participants access to better options for their livestock production. Efforts are underway to increase growth of weaned Bali calves. Researchers undertook feeding experiments at several study sites, and local farmers had the opportunity to visit and view the experimental activities. During the visits they were interviewed to determine their current practices and their perceptions of the experimental treatments and results. On completion of the feeding studies the team will conduct an economic analysis and also demonstrate best-bet options on-farm that will lead to optimal growth rates of the weaned calves. Cost-effective vaccines against Jembrana disease in Bali cattle are being developed with a commercial partner and in partnership with the Government of Indonesia.

ACIAR's Indonesia program has addressed **policy options for Indonesian agribusiness**. In one project, officers in the Indonesian Ministry of Agriculture (MOA) are receiving training in detailed trade analysis of global markets. Their training has implications for Indonesian agribusiness companies, who will benefit with help from the MOA officers to analyse export markets and develop new export strategies. Longstanding joint research efforts to better understand the fishery characteristics and related resource status of commercially important shared fish stocks between Indonesia and Australia continued, with the study on sharks and rays drawing to a close. Amongst its many achievements has been the publication of a well-received illustrated guide to the commercially important shark and ray species in Indonesian waters (see page 41). Research on tuna is now in its third year, with the tuna longline fishery observer program functioning well and the country fishery status report in draft form.

In a focus on **better planning for more productive smallholder aquaculture**, a project involving the Australian Institute of

Marine Sciences and partner laboratories in Bali and South Sulawesi is studying water-quality parameters and chemical composition of the sediments in the vicinity of experimental sea cages, which are part of a lucrative industry providing income for coastal communities throughout the tropics of Asia. A parallel project with the same partner agency in South Sulawesi, the Research Institute for Coastal Aquaculture, and involving the University of New South Wales is developing simple mapping and planning tools to guide land-use decision-making regarding aquaculture developments in coastal areas, by farmers themselves, and at local and national policy levels. The geographical coverage of both projects has recently been extended to include more intensive aquaculture sites in Lampung, South Sumatra.

ACIAR has an ongoing commitment to help restore agriculture and fisheries in the regions affected by the **tsunami**. The tsunami destroyed or severely damaged more than half of the province's **brackishwater aquaculture ponds ('tambaks').** A project to build technical capacity and support research for the reconstruction of tsunami-affected tambaks in Aceh has delivered regular technical training workshops covering soil assessment, soil remediation, pond and canal engineering, and pond management. ACIAR and the AusAID-funded Australia–Indonesia Partnership (AIP) are also cooperating on the reconstruction and rehabilitation of the Regional Brackishwater Aquaculture Development Centre at Ujung Batee, the technology development and extension centre for aquaculture in northern Sumatra that suffered extensive damage in the tsunami.

Another fisheries project, collaborating with the WorldFish Center, has undertaken a community-needs assessment and surveyed the fisheries resource status in Aceh. Evidence of **unsustainable fishing practices and overfishing** were already threatening fisheries pre-tsunami, and this is an opportunity to introduce the concepts of long-term sustainability to coastal communities.

During the year projects also commenced to lift **productivity of tsunami-affected soils**. One project confirmed that high salinity of water in the root zone or rice bay is a widespread and persistent production problem. Timely assessments of soil salinity using methods tested in this project can prevent waste of effort and inputs by avoiding establishment of crops in areas that are still too saline, and indicate when it is appropriate to introduce specific practices to alleviate salinity. The project has trained research and extension staff in a rapid field method to assess soil salinity in relation to crop performance. Soil mapping has identified **acid sulfate soils and sandy textured soils** as the principal limiting factors for reconstruction. The mapping work in Aceh revealed that approximately 470,000 ha of coastal sediments could be classed as acid sulfate soils. Tidal conditions are also an important factor and require site-specific assessment. Soil remediation methods developed under an earlier project can be applied to the acid sulfate soil problems in Aceh, but there are no easy solutions for the sandy soils.

ACIAR has an ongoing commitment to help restore agriculture and fisheries in the regions affected by the Boxing Day 2004 tsunami

Smallholder Agribusiness Development Initiative (SADI): ACIAR's role

SADI, a 10-year program with an initial funding commitment from the Australian Government of $38 million for the July 2006 – December 2009 period, aims to improve rural-sector productivity and growth in four eastern provinces. It will improve incomes and productivity for farmers and agribusiness in response to market opportunities, through a process that is underpinned by improved adaptive R&D capacity. It comprises three subprograms, each of which also builds on existing activities in Indonesia:

- enhanced smallholder production and marketing (implemented by the Kecamatan Development Program Secretariat of the Ministry of Home Affairs, supported by the World Bank)
- strengthened private-sector agribusiness and small to medium enterprise development (implemented by the International Finance Corporation)
- support for market-driven adaptive research (implemented by ACIAR).

The purpose of the ACIAR–SADI subprogram is to develop strengthened province-based agricultural R&D capacity that is market- and client-driven and to effectively transfer knowledge to end users. A feature of this subprogram is its integration with other subprograms on enhanced smallholder production and marketing and strengthened private-sector agribusiness development.

In its first year, significant progress was made. Project offices were established in Makassar and Bogor, and international and Indonesian research and support staff appointed. Priorities for research investment were identified through workshops of industry, farmer groups, government and researchers held in each of the four partner provinces in November 2006, and through institutional and market assessments. ACIAR–SADI is focusing on areas that build on provincial experience in a product but allow the development of profitable and sustainable supply chains. Over 20 technical and market analyses have been designed to identify researchable issues and impact pathways, and over a dozen, focusing on fruit, vegetables, estate and field crops and some aquaculture products have been completed. The first group of collaborative R&D projects has been designed and implemented.

Initial field consultation was completed for a second ACIAR–SADI component, which aims to establish improved linkages and more effective knowledge transfer processes between R&D providers and extension providers. New extension media and methods to assist in dissemination of R&D outcomes will be piloted in the field. A final component focuses on institutional development, and will assist with the development of optimal R&D planning and budget-allocation policies and procedures, assist in human resources development and upgrade infrastructure and equipment. In-depth institutional and information-technology assessments were conducted centrally and in the Assessment Institutes for Agricultural Technology in each of the four partner provinces. A number of training activities were conducted, including a 2-week study tour of Australia for senior managers. This exposed the group to current Australian best practice in research priority setting and funding, and the role of industry, farmers and inter-institutional collaboration in delivering targeted and relevant research outputs.

Smallholder farmer grazing his cattle along the roadside

Surprising diversity revealed in shark and ray survey

During the past 50 years, Indonesia's extraordinary shark and ray diversity has developed into a critical commercial commodity for many millions of people throughout the archipelago. One key factor has driven the massive growth in the exploitation of sharks in this region, as it has elsewhere in the world—escalating demand from China for shark fins. Almost all species are targets and large dried fins can attract as much as US$1,500 each in Hong Kong.

Before Australian fisheries biologist Dr William White visited Indonesia, he thought that gathering information about the sharks and rays caught by local fishermen would be a reasonably straightforward task. But in his first forays into Indonesia's fish markets he quickly realised that here was an array of species that didn't fit with current knowledge. At the time he was working on an ACIAR project, exploring artisanal shark and ray fisheries—traditional operations run along subsistence lines—in eastern Indonesia. The project recorded sharks and rays of sizes and in locations that were not expected, and found species that turned out to be new to science.

The work has grown into the most extensive biological and taxonomic investigation of Indonesian sharks and rays ever undertaken, a collaborative effort that ultimately involved scientists from CSIRO, Murdoch University and Indonesia's Institute of Sciences and Research Centre for Capture Fisheries.

Dr White and his Indonesian colleagues trained local people in rudimentary aspects of shark and ray biology and taxonomy and, with their help, documented more than 40,000 individual sharks and rays from 14 fish landing sites and markets across Indonesia's east. Basic biological data, such as size and sex, were recorded for almost half of these.

At least 20 new shark and ray species were discovered, and in late 2006 ACIAR released a bilingual book, *Economically important sharks and rays of Indonesia*, based on the project's findings. It will radically expand global awareness of Indonesia's sharks and rays, and is seen as a critical tool for further research into commercial fish stocks of interest to Indonesia and Australia.

As well as Dr White's study, Professor Malcolm Tull from Murdoch University has led a team to gain a better understanding of the socioeconomic issues surrounding eastern Indonesia's artisanal shark and ray fisheries. The work so far has enabled Professor Tull and his colleagues to prepare advice on policy and management strategies to support more sustainable economic activity for the region's small fishermen.

At least 20 new shark and ray species have been discovered in Indonesia

Vietnam

Active projects in 2006–07	41
AOP budgeted expenditure in 2006–07	$3,141,101
Actual expenditure in 2006–07	$2,912,043
Expenditure in 2005–06	$2,818,648
Expenditure in 2004–05	$2,983,069

Mr Geoff Morris, ACIAR Country Manager, Vietnam

Medium-term strategy

ACIAR's Vietnam strategy emphasises research to assist the enhancement of smallholder incomes through crop and livestock diversification within farming systems, and improving market access through the improvement of the safety and quality of agricultural products. Research will examine the comparative advantage of particular commodities for domestic and export markets and options for the development of rural agricultural enterprises, including efficiencies of cooperative production and marketing. Fisheries research cooperation will focus on aquaculture, while forestry cooperation will address both conservation and utilisation, with an increased emphasis on higher-value products. Natural resource management research will focus on sustainable cultivation systems for poor soils in central and southern Vietnam and on water conservation. Close linkages to AusAID-funded programs—Collaboration for Agriculture and Rural Development (CARD) and the Quang Ngai Rural Development program—will continue to be strengthened.

Key performance indicators	Performance 2006–07
Linkages between ACIAR-funded research and AusAID-funded development continues to be maintained in at least four CARD projects	Direct linkages between ACIAR projects and seven new AusAID CARD projects were selected for commencement in 2006–07.
Surveillance and diagnostic systems and manuals developed for plant pests and diseases	A manual was developed on surveillance for plants and used in courses conducted throughout Asia. A second manual covers the collation of disease information, illustrations and training notes used in disease diagnosis from many ACIAR projects.
Adoption of fruit-fly management technology and commercialisation of protein baits in north and south Vietnam	Adoption of fruit-fly management technology by tropical fruit growers in southern Vietnam has spread to low-chill stone fruit growers in northern Vietnam. A joint venture was established to commercialise the baits.
Increased emphasis on animal health and biosecurity issues commensurate with the rising concern of avian influenza and Vietnam as an Asian epicentre	Several projects help Vietnamese farmers to manage biosecurity threats, including avian influenza, pest fruit flies, citrus greening, stored grain pests and brown planthopper and viruses in rice.

Continued emphasis in aquaculture and fisheries with new projects on shrimps and oysters initiated	A project to assist with the development of a profitable smallholder-based marine mollusc culture industry in Vietnam will start in the first quarter of 2007–08. Vietnam is also a key partner country in an ACIAR-funded NACA-mediated regional network, which will be established to promote the development and broad application of best management practices in shrimp culture through the timely sharing of experience and information.
Forty percent of new projects designed to have significant farmer or policymaker impacts within five years of completion	Four of six projects developed (two standard projects and four small R&D activities) were deemed to have these potential impacts.

Relationship to the AusAID Vietnam strategy

AusAID's program in Vietnam has two strategic objectives. Within the first, 'Broad-based growth by strengthening the governance of the institutions required for a competitive market economy', two sub-objectives are emphasised—to improve the private-sector operating environment and to facilitate internal and international economic integration. Within the second, 'Improved livelihoods for the rural poor focusing on the Mekong Delta and the Central Coast', there is emphasis on four sub-objectives: increased rural productivity, developing human capital, reducing vulnerability to environmental and economic shocks, and strengthening the capacity and accountability of government and the participation of the poor in their governance.

ACIAR's Vietnam program complements AusAID's strategy closely, by supporting underpinning research and development interventions. Major emphases are collaborative investigation of better policy options and interventions for meeting market specifications and opportunities, and technical cooperation to improve market access through the improvement of the safety and quality of agricultural and fisheries products. Although much of the program is necessarily based in Ho Chi Minh City or Hanoi and surrounding provinces because of the location of research institutes and policymakers and the national relevance of particular projects, there is strong emphasis on central coastal regions and the Mekong Delta, with half of the projects in the portfolio working in these regions.

Position

ACIAR's program in Vietnam commenced in 1993, and since that time a significant program in forestry, land and water resources, animal sciences, crop sciences, fisheries and postharvest technology has emerged. While training remains very important there has been an evolution from a predominant emphasis on capacity building to one of practical farmer and policy impact.

Some successes include improvements to rice–shrimp farming, integration of mangrove forestry and shrimp production, improvements to inland pond and small reservoir culture fisheries, introduction and dissemination of improved pig breeds, non-chemical rodent control in rice crops, fast-growing acacias, introduction of improved Acacia forest germplasm, better irrigation management, improved soil fertility management and better control of citrus pests. Some of the technologies arising from these projects are being applied and capacity is being developed in R&D and extension through the AusAID CARD program.

Several new projects focus on extension or adaptation of outputs from earlier ACIAR projects in Vietnam and elsewhere in the region. While most of ACIAR's program is currently based in greater Ho Chi Minh City and Hanoi because of the location of research institutes and policymakers and the national relevance of much of the portfolio, at the

February 2004 country consultation it was agreed that emphasis on central Vietnam, particularly central coastal regions, should increase.

ACIAR will also continue to seek greater involvement of the private sector and NGOs in projects, linkages with other R&D activities and donors, and development of closer linkages between Vietnamese research and extension organisations. There will also be an increased emphasis on implementation of the results of earlier ACIAR-funded research, including developing manuals and other communication materials.

Achievements

During 2006–07 new project opportunities were taken up in selected areas of agricultural development policy and economic analysis, animal sciences and fisheries. As well, a number of current projects across all program areas were extended to increase the uptake of results by farmers and also incorporate them in the policy process. The program was divided into the following themes:

- increasing market competitiveness of Vietnamese agricultural and fisheries products
- optimising water and soil management for sustainable production, particularly on degraded lands.

ACIAR has contributed a sustained effort to develop better policy interventions for meeting market specifications and opportunities. A project to strengthen agricultural marketing activities in Vietnam has undertaken case studies on fruit marketing in the northern mountainous regions. These studies were later discussed at a workshop attended by Department of Agriculture and Rural Development scientists, district extensions officers, People's Committee officials, and several fruit farmers. The discussion revealed the need to give more emphasis to markets, particularly when developing policies supporting supply expansion. During the project Vietnamese economists had the opportunity to observe and learn from a field trip to Australia. They visited ABARE, the Productivity Commission, and the Economics Division of the New South Wales Department of Primary Industries, as well as several universities. Another visit of significance was to the Sydney fish markets. The trip introduced them to some institutional design concepts that are being incorporated into Vietnam's new Institute for Policy and Strategy for Agriculture and Rural Development.

Tay Nguyen (Central Highlands) supplies agricultural and forestry produce to domestic and international markets, and the region is also the leading coffee producer. Government policies have intensified agriculture and forestry and the population has also risen in the past three decades. Groundwater consumption has now reached unsustainable levels, with droughts in 2003 reducing agricultural production and threatening domestic water supplies. A project is undertaking biophysical and socioeconomic **assessment of groundwater access**. The project team is calculating long-term water availability, conducting a social cost–benefit analysis, and then guiding the development of a cost-effective institutional framework to encourage improved water use. Data gathered from extensive surveys have enabled researchers to estimate household water demand and environmental flow values. As well, farm survey results have helped to estimate the water crop production function for dry season irrigated rice. The findings reveal substantial scope for increased irrigation efficiency in rice production, which will actually improve economic returns to rice farmers. This increase in efficiency will reduce volumetric demand for water, making more available for other uses.

Diseases of fruits and vegetables affect many crops in Vietnam, including coffee, pepper, watermelon, sugar, citrus and durian. Diseases, especially soil-borne fungal diseases, are a concern in the central

New fruit-fly control techniques provide a more reliable income for fruit growers and their families in Vietnam

provinces of Quang Nam, Quang Tri and Hue. Earlier ACIAR-supported research with the Hanoi Agricultural University (HAU) built molecular diagnostic capacity, and now a project is focusing on building capacity in diagnosis of soil-borne diseases in these three provinces. To date the research team has established diagnostic laboratories in each province and surveys are underway. So far the team has identified the pathogens causing quick wilt of black pepper, pineapple heart rot and peanut root rot. Fungal diseases identified in Quang Nam include a key disease of short and tall beans and three pathogens of chilli (a major crop). Bacterial wilt was diagnosed in a range of crops such as tomato, bitter melon and tobacco, indicating that this pathogen is of significant economic importance. An initial survey of coffee decline indicates that the problem may be a consequence of termite damage of the bark on the upper tap root and lower stem. This facilitates infection by fungal pathogens, which then develop a slowly spreading root rot. Trials are now in progress to evaluate control measures for all the identified pathogens.

Although the small **temperate fruit industry** in the northern Vietnamese uplands is the subject of much research, outcomes will be limited without improved postharvest fruit handling and effective disease controls. Up to 25% of fruit was lost and marketed produce was often small and immature. A project has focused on identifying and implementing feasible improvements. The initial strategy has been to conduct experiments in commercial orchards, prove the management techniques under Vietnamese conditions, then use the results as extension tools. As a result fruit quality has already improved in experimental orchards across three northern Vietnamese peach and plum production regions, largely through simple management techniques costing

Vegetable market in Hanoi

little to implement. Vietnamese project staff learn the techniques and pass them on to farmers. The addition of fertilisers, mulches, canopy management, fruit thinning and pest management has led to larger, better quality fruit and farmers are now receiving better prices for their produce.

During 2006–07 there was continued emphasis in aquaculture and fisheries. Page 49 has details of progress with reservoir aquaculture. Other projects addressed issues of culturing mud crabs, spiny lobsters, shrimp, finfish and molluscs. Results from **feeding experiments with mud crabs** in intensive culture systems at the Research Institute of Aquaculture at Nha Trang showed that the highest final weights were obtained with crabs fed a diet containing 43% crude protein and 15% lipid. Furthermore, it was shown that up to 25% of fishmeal in formulated diets could be replaced by either krill meal or soybean meal without significantly reducing growth performance. Pilot pond trials were then conducted at Nha Trang to determine if diets developed using the intensive culture systems could be applied to semi-intensive pond culture systems typically used in commercial crab culture in South-East Asia. The studies showed that growth equivalent to that achieved using trash fish can be obtained with the formulated diets. Significantly the final weights of crabs grown in pond environments were 8–10 times higher than those grown for an equivalent period in the intensive culture systems. Apparently additional natural nutrition available in pond environments promotes the higher weight gain, and the scientists are now studying how they can obtain growth equivalent performances from the intensive culture.

Lobster aquaculture in Vietnam relies on the collection of wild seed but they have high rates of mortality in caged grow-out facilities. An extensive study is revealing much about the ecological impact of lobster seed collection and seasonal incidence of breeding in caged lobsters. Studies are underway to determine how to reduce post-capture losses of these seed lobsters, to develop less polluting methods for cultured lobster grow-out, and to optimise lobster feeds and feeding schedules.

Small-scale aquaculture of **freshwater species in the Mekong region** in Vietnam (and also Cambodia) is a potential important source of income for villagers. But costs associated with feed and feeding, along with limited availability of suitable feed ingredients, have limited development. A project to identify prospective feed ingredients has collected a range of samples for an ingredient database. The digestible value of eight key ingredients has been determined, providing valuable guidelines for future feeding. This project will have the added bonus of making a major impact on the catfish industry in the Mekong Delta, where there have been rapid moves away from farm-made feeds to commercially extruded diets and from river-based cages to ponds. Total production of catfish is now approximately 415,000 tonnes per year—a yearly increase of more than 100,000 tonnes since the project commenced.

A new initiative is exploring the potential for **culturing bivalve molluscs** such as native clams, mussels and oysters. A project just underway is looking at how to better utilise this resource for Vietnam, which, despite its 3,000-km coastline, trails its Asian neighbours in production. China has moved from

Freshwater crab

gathering natural seed to hatchery-produced seed, and this project will attempt to emulate that success in Vietnam with a guided program of training and potential species evaluation to develop bivalve hatcheries.

Smallholder farmers supply 80% of all pigs in Vietnam, but the long-term viability of production is threatened by the high cost of feeds, most of which are imported. A project is exploring the feasibility of **feeding cheaper local feedstuffs**. One possibility is meal made from rubber seed, but it contains considerable amounts of cyanide when harvested fresh. The project has developed a protocol that successfully removes virtually all the cyanide, but further testing is needed before digestibility and feeding studies of this highly nutritious product take place. Another possible source of feed is the residue left after processing cassava to remove the starch. The project team has visited a number of cassava-processing plants and believes that, once the matter of cyanide has been settled, there is potential to modify the plants to commercially process the rubber seed. Pig-feeding studies with cassava residue have provided information on the nutritional value of this by-product and the levels at which it can be effectively and safely used.

Demand for beef products is rising in Vietnam, and cattle-rearing and finishing are considered top priorities for smallholders in Quang Ngai province. A project is helping to establish **year-round feeding options** by cataloguing available feeds and their nutritive characteristics. Two feeding experiments have provided data on liveweight gain responses to different combinations of forage and locally available concentrate supplements. Verification of feeding options has involved working with farmers in Hanh Phuoc commune. A participatory approach has given those farmers involved a sense of ownership and increased their level of commitment. Results of this study indicate improved weight gains, with the farmers agreeing that the technologies are easy to implement and profitable for them.

The opening ceremony of a workshop on enhancing the safe production, promotion and utilisation of indigenous vegetables by women in Vietnam, from left Dr Nguyen Van Bo, His Excellency Mr Bill Tweddell, Her Excellency Madame Truong My Hoa, Mr Peter Core, Madame Ha Thi Khiet, Mr Geoff Morris, Dr Dao Xuan Hoc.

In a related activity in Quang Nam province, an ACIAR initiative is augmenting the World Vision Vietnam Area Development Plan by **training World Vision staff and community leaders** to administer and manage projects to improve cattle productivity. Extension staff in the district and communes are gaining technical and extension knowledge, so that they can help local people to adopt the more productive technologies.

Lack of water hampers agricultural development in the coastal provinces of central Vietnam; also sandy soils near the coast are highly permeable and infertile. An ACIAR project just commenced is designed to increase farmers' incomes by improving the productivity of horticultural crops such as cashews. It is introducing technologies that enable **efficient use of water and nutrients**—nutrient management strategies can minimise leaching losses, particularly in areas with shallow groundwater. The project is focusing on getting the most from wet–dry seasonal climates. In particular it is trialling partial root zone wetting and drying (PRD), a highly efficient irrigation technology that to date has not been evaluated in wet–dry season climates. The project is also helping to build the technical capacity of the Agricultural Science Institute for Southern Coastal Central Vietnam, which is being developed as the main research and extension centre for central coastal Vietnam.

Marine finfish cage farm in Ha Long Bay

Facing the future for Vietnam's reservoir aquaculture

ACIAR has supported a suite of initiatives over the past decade, aiming to improve fish production from inland water bodies in Asia and Australia. The studies are on both larger perennial systems and smaller seasonal water bodies.

The first Vietnam project started in 1998. It highlighted several areas for potential research and led to the development of two new linked projects. One, a technical activity within the Fisheries Program, concerned culture-based and capture fisheries development and management in reservoirs in Vietnam, and focused on improving the fish yield from small-to-medium-sized farmer-managed systems as well as larger reservoirs. The other, within the Agricultural Development Policy Program, focused on the economics of developing reservoir aquaculture in Vietnam and looked at how to help local fisher and farmer communities by increasing the economic value of such fisheries.

The first project introduced local communities in northern Vietnam to knowledge-based management of cultured fisheries in small reservoirs. Outcomes included determination of best fish species combinations to grow in the reservoirs, effectiveness of staggered harvesting, and use of manures added to the water to increase yields.

The project team believes that the research results have led to attitude changes among stakeholders and more ready adoption of culture-based fisheries in reservoirs. Project members have also been instrumental in convincing Vietnamese Government institutions to recognise fisheries resources as integral to reservoir functions, leading to development of line agencies for their management.
The project found little evidence of environmental impact of the present culture-based fisheries, which is not surprising since fish stocks are currently fed primarily on natural food with extremely low input of supplemental feed. The environmental impact of cove culture on capture fisheries in large reservoirs is less clear, because cove areas are important as feeding, nursery and spawning grounds for capture fisheries. The whole situation may change dramatically as the Vietnamese Government works towards its target of lifting current production of 20,000 tonnes to 250,000 tonnes by 2010.

The second project emphasised the economic development path for reservoir fisheries in Vietnam, viewing reservoirs as a multiple-use resource that needed managing to produce the best outcomes for all groups in society. For instance, the importance of water use for electricity generation and farm irrigation could mean that decisions taken by those in charge of them would adversely influence growth of reservoir fish production.

A key element of the project has been the development of the BRAVO model of reservoir aquaculture in Vietnam. This model, which is underpinned by biological and economic data, has provided useful insights into the potential profitability of reservoir culture and the need to strengthen institutional arrangements for reservoir leasing and credit arrangements. The 'risk' version of the BRAVO model has already developed risk profiles of reservoir aquaculture and defined the scope to improve profits and reduce income variability.

Philippines

Active projects in 2006–07	28
AOP budgeted expenditure in 2006–07	$2,943,835
Actual expenditure in 2006–07	$2,832,625
Expenditure in 2005–06	$2,829,547
Expenditure in 2004–05	$2,295,395

Ms Cecilia Honrado, ACIAR Country Manager, Philippines

Key performance indicators	Performance 2006–07
Ongoing involvement of farmer groups and local government in participatory research and extension in ACIAR projects	Participatory research and extension is a feature of three projects commenced in 2006–07.
Priorities from 2006 Philippines–ACIAR country consultation addressed in development of new themes and projects	Several projects under design address improved quality and marketing and market access for vegetables. In fisheries, two new projects investigate the potential for reef ranching and restocking of sea cucumbers, and opportunities to improve product quality, market access and prices for molluscs. A major scoping study on policy constraints to the adoption of research outputs was conducted.
Community Agricultural Technologies Program (CATP) commenced and at least six new collaborations between Philippine—ACIAR researchers and NGOs formed	CATP commenced and six collaborations with NGOs were formed.
ACIAR–AusAID Landcare project farmer groups established in Agusan del Sur and Bohol, implementing livelihoods diversification approaches	Two new Landcare sites in Agusan del Sur and Bohol have been established. Livelihood diversification approaches have been successful.
Forty percent of new projects to have significant farmer or policymaker impacts within five years of completion	One of two 'standard' projects developed in 2006–07 were specifically designed to have 'Category 1 impact'. In addition seven CATP projects were implemented.

Position

ACIAR's program in the Philippines has been active since 1983. Initially the program had several projects dedicated to research on soil management issues—nutrient management, erosion control, rice cropping systems, biological nitrogen fixation and tree establishment on degraded land. Research on postharvest storage of grain and giant clam culture was also important. During the 1990s research cooperation shifted towards livestock management and biotechnology. A shift in project location, to emphasise the poorer areas of Mindanao and the Visayas but maintaining strong links to research and development expertise in Manila and Los Baños, will continue.

Improving uptake of research in the Philippines is a major priority and, in

Relationship to the AusAID Philippines strategy

The AusAID Philippines country strategy has three key objectives: to remove impediments to broad-based growth through stronger economic governance; to improve security and stability through counter-terrorism capacity building, support for the Mindanao peace process, and humanitarian and emergency assistance; and to improve the living standards of the rural poor in the southern Philippines. AusAID assistance to raise rural incomes includes programs to improve local government planning and service delivery, rural production and marketing, and basic health and education services as well as vocational and technical training.

collaboration with Philippines partners, ACIAR has increased its emphasis on better understanding extension processes and involving farmer and community groups in projects. In recent times there has been encouraging success with the adaptation of the Landcare approach in Mindanao, management of catchments in the Visayas island of Bohol, and in the uptake of methods for successful tree establishment on degraded lands. New research projects should be underpinned by design processes that involve the end users of the research and address their needs. Project design should also accommodate the additional challenges that have arisen from the devolution of the management and governance of extension responsibilities to local government units, and the comparatively weak research–extension linkages that often currently exist.

With the main aim of ACIAR cooperation being to assist the Philippines to increase the marketability, international competitiveness and market access for Philippine agricultural products, ACIAR and AusAID have initiated some jointly funded activities in the areas of postharvest technology, disinfestation and pest management in fruits such as mango, and in scaling-out of the Landcare approach to farmer-driven natural resource management. During 2006 a new initiative—Community Agricultural Technologies Program (CATP)—to link ACIAR-generated technologies and Philippines research providers with non-government and community-based organisations, commenced.

One major international agricultural research organisation, the International Rice Research Institute (IRRI), is headquartered in Los Baños. ACIAR provides core funding to IRRI and also supports additional initiatives aimed at maintaining rice productivity. The regional office of the International Network for the Improvement of Banana and Plantain (INIBAP), a network of the International Plant Genetic Resources Institute (IPGRI), is also headquartered in the Philippines.

Achievements

ACIAR's Philippines program in 2006–07 focused on three major themes:

- increasing the market competitiveness of Philippines agricultural products
- farmer-based land and water resource management for profitable and sustainable agriculture
- addressing regulatory, policy and technical constraints to the adoption of research outputs.

In the Philippines field infestations of insects cause losses and damage levels ranging from 10–40%. Insect damage may limit market access, particularly for small-scale farmers. A project has focused on how to improve **control and detection of seed and pulp weevils in mangoes**. For the province of Palawan, scientists have developed an integrated pest management work plan, designed to reduce usage of insecticides by 40% while improving control of pulp weevil, leafhoppers and fruit fly. As well, **deficiencies in the supply chain of mangoes** from producer to point of sale severely affect

Tropical fruit stall in the markets in Davao City, Southern Philippines

fruit quality and market opportunities. The project is developing a 'road map' from which technical or business priorities can be identified and strategies implemented to bring about improvements. So far the researchers have mapped the Philippine mango supply chain in detail, and this is now being validated during field visits to the production areas in Davao del Norte, Davao del Sur and Guiamaras provinces. From the same studies the researchers are gaining an overview of the major technical postharvest problems.

A project to **introduce biofumigation** has achieved its objectives. The researchers successfully tested natural fumigants produced from residues of certain varieties of brassica crops, as a substitute for methyl bromide fumigation to combat soil pathogens, including bacterial wilt (BW) and root knot nematode. They developed a rapid, efficient screening assay to quantify volatile suppression of BW and other soil-borne pathogens. The Northern Mindanao Agricultural Research Center is making its distribution of clean potato seed to farmers in Mindanao contingent on their agreement to adopt biofumigation techniques on their farms. Now farmers from the provinces of Benguet, Pangasinan, Bukidnon, Davao del Sur and South Cotabato have started to use biofumigation within their cropping systems and have obtained around 20% increase in crop yield. Two collaborating farmers who had abandoned potato growing on their farms have returned to the crop since incorporating biofumigation as part of their BW control strategy. They are now demonstrating the concept to other farmers in the region.

Shrinking water availability and the increasing trend to direct seeding is allowing weeds to compete during rice crop establishment. Herbicide use is rising as a result, and with it comes the potential for resistance—there are two or three rice seasons in the Philippines and hence, farmers spray herbicides up to six times per year. A project is developing a framework for examining public policy towards herbicide use and preparing to deal with actual or impending resistance. The project has established a herbicide-resistance testing procedure through PhilRice and, via a field survey and a national network of extension and agronomy agents, has screened a number of populations of major

weeds for resistance to important herbicides. Participatory on-farm trials over several seasons at four Philippines' sites have tested an **integrated weed management (IWM)** strategy combining good land preparation, intermittent water management, and single herbicide application of a pre- or early post-emergence herbicide. The IWM strategies, tested alongside the farmers' current weed management practice, are showing better weed control, increased yields and higher profits.

ACIAR has been involved for some years in programs to **introduce Landcare principles** in parts of Mindanao. Now further research has assessed the sustainability of the approach at the original sites and tested the approach at new sites with differing needs, such as on Bohol Island. Preliminary findings highlight some key factors in institutional success—commitment, competence, leadership, incentives and effective partnerships. Progress has continued in sustaining and scaling up adoption of conservation farming systems and diversified livelihoods. The latest project has facilitated or provided 55 major training and networking events, including training and exposure to expertise in nursery management, and production of many products such as forage, high-value vegetables, fruit trees, livestock, coffee, coconut, abaca, bamboo, mushrooms, medicinal plants, bananas, wood products and fish. Groups have received training in subjects such as integrated crop production, soil and water conservation, agroforestry, permaculture, soil testing, integrated pest management and biodynamic production.

A project is determining what factors make seasonal forecasting more valued. Farmers and industry people need reliable **seasonal climate forecasts (SCFs)** to better cope with the adverse effects of seasonal climatic variabilities like El Niño and La Niña. These forecasts are made prior to the start of any season of agricultural significance. By using sea surface temperatures and atmospheric indices, a probabilistic forecast can be made. Farmer acceptance of their value relies on the ease of use, including lead time, consistency and transparency. Case studies from both the Philippines and Australia are being subjected to this value-testing via an economically derived framework. The researchers aim to help farmers in rainfed agriculture in both countries to benefit by addressing their reservations surrounding forecasting accuracy.

Smallholder agroforestry systems in Leyte are being tested for **measures to improve timber yield and quality** and to improve market access. The project team has worked to define and implement local-level policy changes in relation to tree cutting and transport regulations, with increasing success. The pressing issue of limited higher quality seedling supply has emerged as a major constraint to development of the Philippines agroforestry sector, and a newly commissioned ACIAR project will investigate how to enhance tree seedling supply via economic and policy changes in the nursery sector.

Experimenting with protected cropping structures to reduce rainfall damage in vegetables in Leyte, Philippines

Work on **sustainable use of shallow groundwater** has focused on two pilot sites within neighbouring municipalities in the province of Ilocos Norte, located on the north-western tip of Luzon. The project team focused on characterisation of the groundwater resources at the two locations. Data collected is helping determine sustainable yield and set up a groundwater model. The model will enable future impacts of groundwater extraction to be determined, as well as impacts of changed management. Pumping tests have determined rates of water movement through the aquifer, and pressure loggers in a number of wells have recorded fluctuations of water levels. The researchers conducted an economic assessment of agricultural productivity within the two field sites, where rice is grown during the wet season and garlic supplemented by groundwater grown during the dry season. Results showed labour and fertiliser were the largest input costs for both rice and garlic production, although the cost of fuel for water pumps is significant for garlic. Growing one hectare of garlic generates three to four times the return of rice, but rice remains a traditional crop for two reasons—it provides a staple food for household consumption and also rice straw as mulching material for garlic.

The Philippines and Indonesia are concerned about the impacts of **illegal, unreported and unregulated (IUU)** fishing, which leads to combined losses of more than US$3 billion per annum to their respective economies. A project was commissioned following the recommendations of an earlier small ACIAR project to further research options to combat IUU in both the Philippines and Indonesia and to implement the FAO-endorsed International Plan of Action on IUU Fishing. First, national workshops on IUU fishing were held in Indonesia and the Philippines, to clarify some of the issues that the two countries must deal in addressing IUU fishing. This was followed by a bilateral workshop to assess the IUU problems in the Sulawesi Sea between the two countries. Both countries shared information on national fisheries laws and regulations, licensing systems, monitoring, control and surveillance, and data collection systems. They also discussed status of stocks and IUU fishing issues in the Sulawesi Sea, arriving at a framework for cooperation to address IUU fishing in these mutually shared waters.

Women working in the field in the Philippines

Rural women take charge

Throughout Asia the story is familiar. Economic pressures are pushing members of farm households to seek off-farm work. And it is usually the wife left behind to look after the farm. Thus women are changing roles from unpaid family workers to farm managers.

Mrs Lien's husband works in a private shoe factory in Ho Chi Minh City. This leaves Mrs Lien to raise the family while she single-handedly oversees the small farm's rice-growing. She describes her life since she started running the family's irrigated farm in South Vietnam:

My husband comes home once a year…so aside from the traditional tasks I used to do, I now have to do his jobs, such as preparing the nursery for rice seedlings, irrigating the fields, broadcasting fertiliser and spraying pesticides. After going to the market and finishing household chores, I visit our fields every day.

In the northern Philippines, another woman whose husband is a seasonal migrant says:

If my husband is away, I supervise the farm's crop operations. My husband leaves after the land preparation to work as a carpenter in another province for at least four months. Now I have to check when the crop is ready and start hiring labourers to harvest it. I find it difficult to hire labourers because there is competition during these peak months.

Stories from north-eastern Thailand are similar. The women left behind must take on new managerial responsibilities. One Thai wife says:

Although my husband's remittances from construction work are a big help to us, particularly for our children's education, I have to manage the labourers for rice production and for crop care of the rubber plantation. I make all the decisions about farm and household matters. When in doubt, I phone my husband.

These changing roles are bringing to light another difficulty, which was outlined by Dr Thelma Paris, a social scientist with IRRI. She said:

The women's lack of access to the information and resources they need for new crop and water management technologies can have a negative impact on the productivity and sustainability of local agriculture. Agricultural technologies, practices, policies and systems are based on the conventional assumption that farmers in developing countries are full-time male farmers.'

Dr Paris is leading an ACIAR project that is looking at social changes occurring in agriculture in Asia and also Australia, and the changing roles of women as a result of off-farm employment or migration. The project involves IRRI, Curtin University of Technology (Western Australia), Khon Kaen University (Thailand) and the Cuu Long Delta Rice Research Institute (Vietnam). The team brings a mix of social science skills, including gender specialisation, agricultural economics, sociology and extension. She said:

Our research should provide early warning of rapid changes that may be undermining the national and regional food security that we've worked so hard to achieve over the past several decades.

The researchers have conducted focus group discussions with women farmers in the Philippines, Thailand, Vietnam and Australia, to identify the factors that constrain or support the adoption and diffusion of technologies and to understand more of the difficulties faced by women in agriculture due to male out-migration. As part of the project, 60 women who are heads of farms in selected villages from the Philippines, Thailand and Vietnam have an opportunity to test new strategies and improve their farm productivity. Their findings should prove valuable for women throughout the region.

East Timor

Active projects in 2006–07	5
AOP budgeted expenditure in 2006–07	$1,863,500
Actual expenditure in 2006–07	$1,547,163
Expenditure in 2005–06	$1,870,139
Expenditure in 2004–05	$522,340

Key performance indicators	Performance 2006–07
Successful implementation of jointly funded ACIAR–AusAID Seeds of Life 2 program in close partnership with Ministry of Agriculture, Forestry and Fisheries (MAFF)	*Seeds of Life 2* is well implemented within MAFF. New varieties of maize, sweet potato, rice and peanut were released. During 2006–07, *Seeds of Life 2* installed 985 on-farm variety tests. Other activities with MAFF include training, social science and economics studies of farm households, research station infrastructure development, and seed production.
At least four demand-driven small projects commissioned to leading agricultural researchers	Civil disturbances delayed project implementation—two projects commenced with several more to commence by the end of 2007.

Position

Agriculture provides livelihoods for more than 80% of East Timorese. The similarities of East Timorese and northern Australian environments offer Australia a comparative advantage in applying its research, development and extension skills to assist this new country. ACIAR began collaboration with East Timorese institutions in 2000, and current projects aim to help achieve food security, reduce poverty and build local agricultural research capacity. Two ACIAR projects commenced in early 2001:

- the *Seeds of Life* project, which aimed to improved crop production through introduction, testing and distribution of planting material of major staple crops that was better adapted to Timorese conditions
- rehabilitation of the agriculture faculty at the National University of East Timor.

The first phase of the *Seeds of Life* project has now concluded. A number of improved varieties of staple food crops have been identified in field trials in a variety of lowland and highland settings around East Timor. Suitable varieties of sweet potato, maize, rice, peanut and cassava have been identified. Many of these have been tested or are in the process of being tested in farmer participatory research. Some varieties appear well adapted to local conditions, have tolerance or resistance to pests and diseases, and have demonstrated a sufficient level of tolerance to drought and soil stresses.

A major successor program, *Seeds of Life 2*, is being co-funded by AusAID and ACIAR and delivered in close partnership with the Ministry of Agriculture, Forestry and Fisheries (MAFF). The program, which has a budget of almost $8 million over 5 years, commenced in late 2005 and is expected to continue the introduction and evaluation of improved crop varieties, while devoting more resources to seed production, the identification of improved crop management techniques, farmer participatory extension of identified cropping improvements, and to the training of MAFF and other staff in seed production as well as crop research and extension. Five international CGIAR centres will continue to supply crop materials and expertise, while NGOs will be involved in the extension where

possible. By the project's end, it is expected that many East Timorese farmers will have adopted improved varieties and cropping technologies, and that MAFF will be able to manage field crop research and development activities with its own resources.

Rehabilitation of the Agriculture Faculty at the National University of East Timor has been important in providing facilities for applied agricultural research, and in training East Timorese in agriculture. The project team has developed a new agriculture curriculum that aims to equip students to identify and solve problems in a farming systems context. Laboratory facilities at the Hera Field Station have been restored to provide practical sessions for science and agriculture students. This facility is the only working agricultural laboratory in East Timor, and a number of foreign donors are also using the laboratory in their project activities.

New projects on Siam weed control and cassava production commenced in 2004–05 and, in early 2006, a small R&D projects funding and management facility was established to support focused activities addressing high priorities in agriculture.

Achievements

The East Timor program continued to emphasise applied research, together with the **development of local capacity** for applied research and development to underpin the reduction of food insecurity. In 2004 the World Food Programme estimated that 90% of all East Timorese households experience food shortages each year.

Through the initial *Seeds of Life* (SOL) project superior varieties of maize, cassava, sweet potato and irrigated rice were trialled. This project also established, within MAFF, a small scientific and extension base for cropping. Now the SOL2 project, undertaken in conjunction with AusAID and implemented as a program in MAFF, is building on the earlier work.

All five CGIAR centres collaborating with SOL have provided **well-adapted breeding lines and varieties** of maize, cassava, sweet potato, rice, peanut and pigeon pea for evaluation, and 23 replicated trials were installed in the main season. Select maize varieties demonstrated yield advantages in excess of 100% over locals. In the sweet potato trials, four introduced sweet potato clones all possessed yield advantages in excess of 130% over the local varieties, and were also good eating. Although the top five cassava clones have out-yielded local varieties by 40–60%, local farmers cultivating cassava desire

Relationship to the AusAID East Timor strategy

The overarching goal of AusAID's future development cooperation program will be to assist the Government of East Timor to achieve stability and prosperity. Support over the medium term is expected to focus on g**overnance**—capacity building through enhancing stability and security, and improvement of public-sector management to deliver services and **basic service delivery,** including further support for rural water supply and sanitation, food security, and health.

ACIAR's program in East Timor focuses on the food-security aspect of this strategy, with AusAID co-funding the largest project in the portfolio (Seeds of Life 2), and several other projects addressing other aspects of food security. Long-term engagement of the relevant government ministry (MAFF) and the University of Timor Loro Sa'e contributes to the governance objective, particularly in terms of capacity building to deliver tertiary education and agricultural extension and research service delivery.

sweetness over yield. Thus newly introduced **varieties with high sweetness** are now being further evaluated. An additional ACIAR project, managed through the International Center for Tropical Agriculture (CIAT), is focusing on the adoption of cassava, using the tubers as food and also roots and leaves as fodder for pigs.

From earlier trials farmers have selected a **favourite line of rice** for its consistent yields and good taste. Seeds of this variety are to be released for commercial multiplication in 2007. Farmers have also expressed a desire to grow PT5 line as their preferred peanut because of its large seeds and superior yields. This variety was included in on-farm trials and is being released in 2007.

Field work has a high priority, and training is underway to teach members of the MAFF Research Development Units to direct **on-farm demonstrations and trials**. Aids in their training include fact sheets on sweet potato, maize and peanuts, and a draft farmer participation research (FPR) manual. AusAID and ACIAR together have fielded an independent Technical Assessment Group (TAG) to provide advice to the SOL program on an annual basis. TAG comprises two externally sourced consultants, with expertise in agricultural research participatory agricultural extension and institutional strengthening, and representatives from AusAID and ACIAR. TAG visited the project area prior to preparation of the Annual Operating Plan to review the progress of SOL in the preceding year. There were also other visits by TAG as required, to evaluate the outcomes and impacts of the program.

Boosting both production and capacity of the agricultural sector in East Timor has proven difficult and will progress best on a small scale. A project is attempting this by investing in microprojects, valued between $10,000 and $35,000, that link Timorese researchers with local agricultural producers. Australian experts are acting as mentors and providing R&D knowledge and other information to support project development and implementation. So far **three microprojects have been approved**. They are: MP1, Analysis of farming systems in 13 districts; MP2, Scoping the current and future market for beef; MP3, Alley cropping as an alternative to slash-and-burn. Data collection is well advanced in the case of MP1 and MP2. In the case of MP3 a preliminary survey is underway to assess potential sites with stands of leucaena or other alley cropping species that have been established for 5, 10, 20 and 30 years, are representative of significant agro-ecosystems and are available for conducting soil-fertility studies.

Mrs Janette Howard visits the Seeds of Life *project in Timor-Leste*

Cambodia

Active projects in 2006–07	17
AOP budgeted expenditure in 2006–07	$1,513,016
Actual expenditure in 2006–07	$1,744,985
Expenditure in 2005–06	$1,435,960
Expenditure in 2004–05	$1,212,879

Ms Chiraporn Sunpakit, ACIAR Country Manager, Cambodia

Key performance indicators	Performance 2006–07
Linkages maintained and expanded between Cambodian research and extension organisations in ACIAR projects	Two major projects conduct most research on farmers' fields and formally include extension personnel and provincial staff along with researchers. This linkage is also a key criterion for the Cambodian Agricultural Research Fund (CARF) projects.
Cambodian Journal of Agriculture issues published with reports of successful ACIAR-funded research	Two issues were funded and published, with several articles based on ACIAR-funded research work.
New animal health and livestock biosecurity program developed and implemented	A project was implemented to investigate innovative ways to manage and monitor livestock movements and the diseases they carry.
Project activities to enhance beef production designed and commenced	A study to define and test best practice cattle health and husbandry has been developed and implemented, while the full design of a project focusing on forages for beef production will be completed in the first quarter of 2007–08.
Disease management strategies for tomatoes assessed in the field	Tomato varieties were assessed in the field on a range of agronomic and postharvest characteristics including pre- and postharvest diseases.
Two Cambodian scientists trained in identification and management of rice diseases	Two scientists were trained and a well-equipped laboratory was established to underpin capacities in plant pathology.
Forty percent of new projects designed to have significant farmer or policymaker impacts within five years of completion	All four new projects were deemed as having most impacts after five years, although in each case some activities will impact in a shorter time frame.

Position

Australia took a major role in assisting Cambodia on its path to democracy in the early 1990s, and in doing so pledged to provide significant development assistance over the medium term. A major component of the AusAID assistance in Cambodia continues to be in agriculture and rural development, and ACIAR will endeavour to link its research projects to new AusAID programs. Several other donor programs in Cambodia have an agricultural and rural development focus, and where possible linkages with these programs will be established.

Cambodia has a very low per capita GDP and the predominance of rice-based farming systems on infertile soils means

Relationship to the AusAID Cambodia strategy

The Australia–Cambodia Development Cooperation strategy emphasises poverty reduction and sustainable development in Cambodia, through three objectives: increasing productivity and incomes of the rural poor; reducing vulnerability of the poor; and strengthening the rule of law.

The ACIAR program through its two emphases (underpinning agricultural diversification, and supporting research that aims to increase the productivity of rice-based farming systems) directly supports the four thrusts of the first objective of AusAID's program, namely improved farming techniques, product processing, access to market information and addressing market policy constraints.

that Cambodia has rather low agricultural productivity on both a labour and land-area basis. The suite of current, proposed and completed projects is targeted at research to improve rice productivity, assessing land suitability for a second rice crop, and developing options for the production and marketing of non-rice crops. ACIAR will continue to support selected initiatives in animal health and production as well as fisheries. Considerable progress has been made in developing the scientific expertise of a number of Australian-trained Cambodian researchers who should be able to contribute significantly to the development of Cambodian agriculture. ACIAR will also maintain an emphasis on short-course training in areas such as R&D priority setting and management, enhancing research-extension linkages, scientific proposal and report writing in English, and in experimental design and analysis. This will also include training and technical assistance with the production of the *Cambodian Journal of Agriculture*.

Achievements

The Cambodia program has focused on field crop improvement and management, horticulture, land and water resources, animal health, and agricultural systems economics and management. Projects are grouped under the following themes:

- securing productivity of rice-based farming systems
- income generation and better nutrition through agricultural diversification.

Cambodia is moving away from growing largely rice as its core cereal crop and diversifying into secondary crops, to improve human and animal nutrition and boost the cash economy. Work at the Cambodian Agricultural Research and Development Institute (CARDI) now focuses strongly on **non-rice crops for the uplands**, and an ACIAR project is providing researchers, extension workers and farmers with training and experience in relation to such crops. A series of workshops conducted early in the project has helped to identify the constraints to the adoption of diversified farming systems. Farmer meetings and workshops led on to a program of field research, where farmers, provincial agricultural technicians and extensionists plus researchers from CARDI worked in collaboration to set up trials in the farmers' fields. Between 2004 and 2006 the program undertook around150 on-farm experiments and demonstrations, comprising studies of plant variety, insect pests and disease, reduced tillage, agronomy and farming systems. The project team has prepared manuals for growing soybean, maize, mungbean, peanut, cowpea and sesame, and drafted guidelines to help identify weed and insect pests of upland crops. Farmers have learnt the techniques to boost production by lifting the nitrogen content of the soil.

An 'action research' project is aiming to bring about positive socioeconomic change in the Cambodian **maize and soybean marketing** systems. A significant achievement has been the development of a successful

soybean marketing association in eastern Cambodia. The project team worked with the Ta Ong Soybean Association (TSA) in Kampong Cham province. At the outset TSA was a non-functioning association with only 14 members; it now has 160 members (with membership capped at this level). It is operating successfully as a microfinance institution, having made low-interest loans to about 1,000 farmers, and is now looking to build its own dryer-silo and market its members' produce in Vietnam.

Several diseases—brown spot, rice blast, false smut, bakanae and kernel smut—are commonly found in Cambodian rice crops, but little is known about the distribution, prevalence or impacts of these diseases. A project is training Cambodian researchers in **basic plant pathology techniques**. Surveys of lowland rice crops were carried out in five provinces in August 2006 and February 2007. The results highlighted the importance of laboratory isolations to confirm diagnoses—in many instances diseased tissue did not yield the pathogen tentatively identified on the basis of symptoms. CARDI now houses the first plant-disease herbarium in Cambodia. This will curate specimens of correctly identified diseases (initially of rice, but other crops will be included in future) as a record of their occurrence and as training material for plant-pathology personnel.

Vegetable production in Cambodia remains low, due largely to unreliable supply of seed, high input costs and a lack of knowledge of postharvest handling. A project designed to improve **vegetable production and postharvest management** has focused initially on tomato and chilli varieties. Tomato lines selected for trial came from AVRDC (the World Vegetable Center) and previously untested hybrids that commercial seed companies donated to the project. These were performance-tested against existing grower varieties. The trial sites varied in soil type and management system, and therefore the results gave a good indication of suitability of the entries. A tomato-grower survey of 50 farmers complemented an earlier Asian Development Bank (ADB) survey of market agents, collectors and transporters. Types of information gathered about the chain of sale included the means of selling tomatoes (for instance through street vendors or wet markets), methods of packaging and handling, and levels of spoilage. A chilli survey is scheduled for the near future.

A collaborative study involving Cambodian and Lao veterinary services working with Australian partners has learnt much about what drives the movement of **domestic and transboundary livestock**. The scientists are using this knowledge to prevent the spread of livestock diseases, especially foot-and-mouth disease and classical swine fever. They now have a mechanism to explain the existing movement patterns of livestock in Cambodia, Lao PDR and surrounding countries, and have used this to compile a list of indicators that will allow timely interventions to minimise the risk of disease spread. ACIAR has recognised the significance of this work for the region by commissioning a thorough review of livestock health and vaccine development as a prelude to developing several new animal health projects.

In a project to control fasciolosis (tropical liver fluke infection) in cattle and buffalo, the project team surveyed farmers at the project site and found that farmers who received education and extension on fasciolosis and control measures had retained a greatly enhanced knowledge and understanding. Farmers were convinced of the economic impacts of fasciolosis as they realised that infected cattle demonstrated negative traits such as slower weight gain, lower fertility among reproductive females and weaker draft ability. They are keen to have the work extended.

Lao PDR

Active projects in 2006–07	22
AOP budgeted expenditure in 2006–07	$1,079,788
Actual expenditure in 2006–07	$1,066,463
Expenditure in 2005–06	$770,466
Expenditure in 2004–05	$824,152

Ms Chiraporn Sunpakit, ACIAR Country Manager, Lao PDR

Key performance indicators	Performance 2006–07
Through consultation with Lao PDR partners, a new strategy for animal health and livestock biosecurity developed and implemented	A project has been implemented in collaboration with regional disease-control initiatives.
Small grants scheme for Lao research institutions implemented and engages returned overseas-trained Lao scientists	This scheme has been implemented as a new ACIAR project following a successful pilot during the previous year.
Improvements in productivity of rice-based farming systems in central Lao PDR reduce seasonal food insecurity	World Vision distributed seed of higher yielding rice varieties, which alleviated food insecurity in several districts. Farmers also increased plantings of vegetables.

Position

ACIAR has had a program in Lao PDR since 1992, coinciding with the period of expansion of Australia's aid program to the Mekong countries. Distinguishing features of this landlocked country are low population density, high ethnic diversity, poor infrastructure, and geographical dispersion of people. Agriculture employs over 80% of the population and forms 53% of GDP. A major emphasis of past ACIAR work has been the establishment in Vientiane of an animal-diseases laboratory to service Lao PDR. Other successes include the introduction and selection of cold- and drought-tolerant rice varieties, identification of the major rodent pests affecting rice farming, capacity building in forestry research and agricultural extension approaches, management of indigenous fisheries, and provision of training, including in scientific data analysis and scientific writing in English. ACIAR has recently supported a small grants scheme to enable Lao researchers to develop skills in the design and management of agricultural research projects. In 2006–07, a number of new projects commenced. ACIAR expanded its Lao PDR program where opportunities for research collaboration with a high likelihood of farmer impact exist.

Achievements

ACIAR's program in Lao PDR has focused on areas of animal health, forestry, fisheries and crop improvement, together with management to encourage and sustain crop diversification and reduce impacts of shifting cultivation. Projects are grouped under the following themes:

- alternatives to shifting cultivation in upland regions
- agricultural diversification to improve productivity of lowland farming.

Many of the animal health and cropping initiatives studied in Lao PDR are part of collaborative undertakings with other Mekong countries. ACIAR is investing in a range of studies to determine the best way forward for **animal health research**. One project is supporting the development of best practice cattle and buffalo health and husbandry systems for Cambodia and Lao PDR. Prior to developing a full project, ACIAR funded a small research undertaking to confirm that the key concepts and research issues, including economic drivers for enhancing large ruminant productivity, were captured. This has been helpful in defining the best avenues for ACIAR to develop its suite of

current projects and tailor the work for each country. It has also helped to identify the key partners, personnel and preferred locations for undertaking the research. Several new research initiatives have arisen as a result.

Australia and Lao PDR have cooperated since 2003 to strengthen **disease-control options for pigs** in a village setting. Of particular concern are foot-and-mouth disease (FMD) and classical swine fever (CSF). The project team has placed particular emphasis on understanding the social conditions that promote transmission of the diseases. Team members have succeeded in establishing good communication between scientists, veterinary village workers and national institutions. Information such as how piglets are traded at village markets is valuable because here is a perfect opportunity for a disease to spread. The wealth of information gathered should help to break the disease cycle. Since pig farmers in Lao PDR are mostly women, the Lao Women's Union is playing a critical role in circulating information through their extensive network.

In the northern mountainous regions rearing pigs is a widespread smallholder livelihood activity, but productivity is low due to poor nutrition. A project is seeking to **introduce forage legumes** into the farming system, to improve pig nutrition and also to reduce the time that women spend gathering and preparing feed.

Lao (and Cambodian) agriculture relies heavily on rice production from rainfed lowlands where drought is a frequent occurrence and is the major production constraint. A project has sought to **incorporate drought tolerance** into the country's rice-breeding program and thus develop varieties more resilient to drought. The project was successful in developing a method for reliable and routine screening of relatively large numbers of lines for drought tolerance. It has crossed the best drought-tolerant lines with lines for high-quality and high-potential yields, generating new lines that are resilient to drought and yet yield well in good years and have characters desired by the farmers.

Lao PDR has a small teak plantation estate but the country is expanding its resource of teak smallholdings. Optimally designed and managed agroforestry systems can provide significant income streams to rural Lao families. These plantings have become very popular and good prices are now being paid to farmers. An ACIAR project has provided information on the economic, social and other factors influencing the production and marketing of non-timber forest products and plantation teak in Lao PDR. The study has outlined the prospects for the agroforestry systems, estimated potential economic benefits, and identified major constraints.

Relationship to the AusAID Lao PDR strategy

The AusAID program in Lao PDR aims to assist Lao PDR to improve the pre-conditions for poverty reduction and sustainable development. It supports 'appropriate recipient government development priorities as well as donor coordination and harmonisation efforts, in order to maximise development impacts…'. Sectorally the country strategy focuses on building Lao human capital by improving access to education; promoting the growth of the market economy by expanding access to private land titles and strengthening property rights; and reducing the vulnerability of the poor by reducing the impact of natural disasters and unexploded ordnance.

While the ACIAR program, in focusing on agriculture and forestry, differs in its sectoral emphasis, its overall purpose (poverty reduction and sustainable development) and strategic approach is similar. There is also a strong emphasis on assisting the Lao Government's own development priorities in agricultural research for development, and there is a particular effort in Lao PDR to harmonise with other donor programs through supporting underpinning research. Interventions in horticulture, livestock, forestry and agroforestry specifically target the market economy, and the program has a strong emphasis on capacity development training in agricultural research and extension.

Thailand

Active projects in 2006–07	16
AOP budgeted expenditure in 2006–07	$238,237
Actual expenditure in 2006–07	$440,157
Expenditure in 2005–06	$501,180
Expenditure in 2004–05	$522,291

Ms Chiraporn Sunpakit, ACIAR Country Manager, Thailand

Key performance indicators	Performance 2006–07
All new projects under development are focusing on implementation of results of earlier ACIAR projects	A Fisheries project commenced to complement the results of an earlier project on shrimp-virus testing including field validation. Thai involvement in the Lao rice-based systems project builds on earlier ACIAR work in Thailand.
NGOs and farmer groups continuing to build upon ACIAR-funded pilot projects using their own resources	World Vision is expanding 'clean vegetable production' to at least four other provinces. Communities are also scaling out work on low-cost fish-feed production using their own resources.

Position

Thailand was an early and large collaborator, with many projects successfully undertaken. However, as Thailand's own economic and research capacity has increased, its involvement in ACIAR projects has diminished. Successful outcomes include techniques to ensure longer shelf life that have enabled the expansion of tropical fruit exports, the development of cooler climate fruits for the hilly regions of northern Thailand, and fruit-fly identification and control. New fish feed made from cheap, locally available ingredients has helped thousands of Thai fish farmers. A substantial investment in diagnosis and control of foot-and-mouth disease has made Thailand the accepted regional centre of expertise in South-East Asia. The use of software (developed under ACIAR support) to assist in selection in cattle-breeding programs has been recognised through national awards. Over 10,000 hectares of suitable fast-growing Australian trees are planted each year as a result of ACIAR research.

It is expected that Australian investment in projects will continue to decrease in line with the increasing ability of Thai partners to co-invest in projects of strong mutual importance. In some cases, there are spillovers to less developed countries from drawing on the development experiences of Thailand. ACIAR's project investment will be very highly selective and will focus only on implementation of the results of earlier ACIAR projects.

Achievements

The program with Thailand continues to capitalise on the benefits arising from technical and policy research to underpin trade of agricultural products. It emphasises the importance of policy research and market chain incentives in underpinning agricultural developments. Opportunities to promote the application of technology, using both conventional extension methodologies and new approaches, are sought for the benefit of farmers in upland northern Thailand and north-eastern Thailand.

A project to extend earlier work in Thailand with **low-chill fruits** has tested a wide range of species (plum, peach, nectarine, pear and persimmon) in Thailand, and varieties are

now being tested in Vietnam and Lao PDR to replace poor-quality, locally grown cultivars. Work in all three countries has produced promising outcomes. In Thailand, the Department of Agriculture has established stonefruit demonstration orchards at four farmer sites in Khun Wang province and at four sites in Ang Kang province. At an ACIAR demonstration block on Royal Ang Kang Research Station, crops from trees of peach cv. Tropic Beauty produced about 120–150 fruit per tree, with an average fruit weight of 150 grams (18–22 kg per tree). At a conservative price of 80 baht ($3) per kg, returns should equal $23,000 per hectare.

At the World Vision demonstration plots at Ban Kon Pan Village near Chiang Rai in northern Thailand significant **improvements in orchard management** have lifted fruit quality, and newly introduced varieties such Tropic Beauty are performing well. Surveys have revealed that Thai consumers prefer large, highly coloured fruit with high sugar concentrations and low acid. Studies continue to determine how best to raise the understanding of marketing and supply chain management, which should help to implement quality-assurance systems and give better access to export markets.

Earlier ACIAR work helped Thailand to establish a national system of recording and evaluating the breeding and performance of beef cattle and buffalo. This system, which has been run by the Department of Livestock Development, uses a PC software system, 'Herd Magic', to record the data for genetic evaluations to rank animals for genetic merit and monitor genetic progress within and across herds. A new ACIAR initiative has helped to translate the HerdMASTER program (the latest tool on a Microsoft platform) into the Thai language, to enable more efficient data collection.

Two socioeconomic studies are helping Thailand to deal with the intricacies of trade liberalisation and technical change. One study is examining the impact of sanitary and phytosanitary (SPS) measures (important quarantine considerations) on the ability of agricultural-exporting developing countries to achieve the full benefits of trade liberalisation. The study is designed to provide policy recommendations for further improvement of the current World Trade Organization procedure for SPS dispute settlement, and for enhancing technical, scientific and institutional understanding of SPS measures in India and Thailand.

Thailand is also keen to understand the socioeconomic impacts of recent technology developments. A project is seeking to identify agricultural industries that have shown productivity growth and determine why they have grown—is it biotechnical change, such as improved crop varieties and cultivation methods, mechanisation, management improvements, or other reasons? Researchers are compiling a large data set encompassing eight major agricultural sectors and undertaking statistical analyses of the rate and factor-saving biases of technical progress in each sector.

Low-chill packing technology developed in Thailand

Burma

Active projects in 2006–07	2
AOP budgeted expenditure in 2006–07	$75,000
Actual expenditure in 2006–07	$26,582
Expenditure in 2005–06	$208,998
Expenditure in 2004–05	$249,412

Ms Chirapom Sunpakit, ACIAR Country Manager, Burma

Key performance indicators	Performance 2006–07
Assessment completed of the impact of improved chick rearing and Newcastle disease vaccination on the production and profitability of village chicken-keeping in field locations in Burma	Simple interventions have proven to be robust and well accepted at the village level.

Position

After exploratory visits in 2002 to determine the feasibility of collaborative research activities, ACIAR developed a small program with Burma and the first projects commenced in 2003. However, with the current international situation, development of new projects is on hold.

Achievements

ACIAR continued its small program of research cooperation, maintaining the focus on food security and nutrition for villagers. Work continued in the project to **vaccinate chickens against Newcastle disease**. Earlier research made significant gains, and now an extension is consolidating these achievements and ensuring sustainability of the project outcomes.

Extension activities originally started in 2005–06 are now moving beyond the original study site areas and incorporating broader aspects of chicken health. The researchers are increasing awareness amongst village farmers of the economic benefits to village chicken production of chick management and Newcastle disease vaccination. Extension materials (pamphlets, calendars, flipcharts and posters) were developed in the original project and first extension, and these are being expanded to include materials on village chicken health in general. A plan is being developed to ensure best delivery of this extension message, through farmers meetings and possibly plays, radio or television programs.

A new project commenced in early 2007 is designed to help smallholder farmers of the Central Dry Zone (CDZ) of Burma.

At present they primarily grow legumes with minimal inputs of fertilisers, pesticides and herbicides, and yields are low (about 1.0 tonne per hectare). Their food security, nutritional health and livelihoods could be lifted by **increasing productivity of pulse and oilseed legumes**, and this new project is identifying and distributing high-yielding chickpea, groundnut and pigeon-pea cultivars adapted to the cropping systems of the CDZ. The project team is also seeking to increase the productivity of legumes by selecting and testing high-quality rhizobial inoculants (nitrogen-fixing bacteria that live in the root nodules of legumes). Scientists in the region are also receiving training on legume improvement and inoculant technology.

South Asia

Financial year	Regional expenditure	Percentage of total bilateral expenditure	Board target as percentage of expenditure
2006–07	$4,370,781	12.6	<15%
2005–06	$3,504,178	11.4	<15%
2004–05	$3,787,994	13.5	<15%

ACIAR's South Asia program operates in two groups of countries. The first, India, Pakistan and Bangladesh, where most population is centred, is emphasised in ACIAR programs. A small number of activities is under way in the second grouping comprising Nepal, Bhutan, Iraq and Afghanistan. For the region an expenditure target of not more than 15% of our overall annual bilateral research expenditure has been set.

India

Active projects in 2006–07	29
AOP budgeted expenditure in 2006–07	$2,017,584
Actual expenditure in 2006–07	$1,770,516
Expenditure in 2005–06	$2,018,915
Expenditure in 2004–05	$2,601,365

Dr Kuhu Chatterjee, Country Manager, India

Key performance indicators	Performance 2006–07
Significant involvement of farmers and farmer communities in planning and testing ACIAR project technologies in at least two projects	Farmers near Ludhiana started testing the Happy Seeder technology in collaboration with the machinery manufacturer and Punjab Agricultural University. In West Bengal, the NGO PRADAN is working with two communities to increase farm productivity at a small watershed scale.
Policy workshops and papers in trade and water management reaching key government planners	Water management workshops were held successfully in India and Australia involving senior Indian national and state government decision-makers.
Forward strategy for ACIAR involvement in the Indian livestock sector developed and communicated	In a consultation with stakeholders it was decided to discontinue investment in the livestock sector in India. The Livestock Strategy Paper was approved by the ACIAR Board of Management
Significant adoption by tanneries of salinity-reducing techniques for processing hides	Activities were interrupted due to a change in leadership at the Central Leather Institute. Adoptions of new strategies to manage salt effluent, including those assessed in the research, are being adopted due to regulatory intervention.
Production constraints in soybean–wheat systems of Madhya Pradesh identified and appropriate research strategies implemented	Key growth-limiting nutrients and other constraints such as waterlogging have been identified, and NGO partners tested integrated nutrient management techniques and 'broad-based furrow' system with farmer groups.
Preliminary catchment water balances in the Krishna Basin quantified and used to inform water policy decision-making at national and state levels	General water balances for the Krishna Basin have been compiled and communicated on a state scale to key stakeholders in Karnataka, Maharashtra and Andhra Pradesh.
Forty percent of new projects designed to have significant farmer or policymaker impacts within five years of completion	Only one new standard project was initiated in 2006–07 and this was rated as a medium time-to-impact project. A small research activity will achieve significant implementation of shrimp-farming best management practices within five years.

Relationship to the AusAID South Asia strategy

The AusAID framework for assistance in South Asia over 2003–07 'seeks to maximise the effectiveness of programs reducing vulnerability and increasing the productivity of the poor' with an emphasis in the areas of 'health and sanitation, education and natural resource management'. It recognises that countries 'are at different stages of development, each with their own development priorities', for example, in Bangladesh there is a shift in focus from food aid assistance to food security.

The ACIAR program, while emphasising the agricultural sector, also has a strong emphasis on reducing vulnerability and increasing productivity of the poor. In India, there is an increased focus on boosting sustainable production in more marginal lands of the country, and in technical and policy interventions to support ongoing access to water. Policy reform is supported through collaboration on trade and natural resource management policy.

Position

India, the world's largest democracy, faces huge problems in its rural sector even as the overall economy forges ahead. Indeed, the greatest numbers of poor and undernourished people in any country (approximately 250 million) are found in India, particularly in rural areas. At the same time India faces trade liberalisation and rapid diversification of diet towards high-value agriculture. Recent analyses by the International Food Policy Research Institute (IFPRI), however, confirm that investment in agricultural R&D has powerful impacts on agricultural growth and poverty reduction.

Following changes in 2003, and recent discussions in India, it is expected that ACIAR collaboration with the Indian Council of Agricultural Research (ICAR) and the Council of Scientific and Industrial Research (CSIR) on future projects will involve joint funding and focus on high-priority issues or strategic alliances of mutual interest. Funding is also available from the Australian Government Department of Education, Science and Training Australia–India Strategic Research Fund to assist Australian researchers to increase their participation in leading-edge scientific research with Indian scientists, to raise the profile of Australian research, and to support the development of strategic alliances between Australian researchers and Indian researchers and industry.

The Government of India is also encouraging donors to work with independent research organisations (IROs) and NGOs, and ACIAR has taken up this challenge. This will help the goal of increased emphasis on achieving practical farmer-level impacts, particularly in poorer regions of India. The strategy of working in the central and north-western parts of the country will be maintained, given its closer match to Australian agro-ecological zones.

India was one of the first countries to become involved in collaborative projects commissioned by ACIAR. An earlier project on wheat rust control by identifying the various rust races and by the identification and deployment of resistance genes has helped to keep India free of major rust epidemics, with obvious benefits for poor farmers and consumers alike. A molasses-based nutrient block with medication to supplement diets and control internal parasites of straw-fed dairy animals has been developed. For stored commodities, improved means of managing resistance to the fumigant phosphine and of detecting persistent pesticide residues have been developed. Recent research has assisted in the widespread adoption of minimal tillage approaches in wheat seeding in the rice–wheat farming systems, with significant benefits arising from water and fuel saving, timelier sowing, and easier weed management.

India has a large and well-developed national agricultural research system, centred around ICAR, which has collaborated strongly in ACIAR projects. Additional linkages with other groups such as state agricultural universities,

CSIR, IROs and technical NGOs have facilitated technology development and the delivery of benefits. ACIAR engages mainly with researchers in the north-west and centre of India, with research projects presently underway to enable India to manage scarce water and nutrient resources more efficiently, improve yield and quality of cereals and oilseeds, and diversify production and raise farm incomes.

A number of IARCs are also active in India. The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is headquartered in Hyderabad. It has strong programs on peanut, sorghum, millet and chickpea, crop–livestock systems (with the International Livestock Research Institute, ILRI) and on soil management in the semi-arid tropics. The International Maize and Wheat Improvement Center (CIMMYT) and the International Rice Research Institute (IRRI) have significant regional activities in India, many connected with the rice–wheat eco-regional initiative. The International Water Management Institute (IWMI) has a joint program on policy issues with an Indian research institute and other biophysical programs in India. ACIAR supports projects with these IARCs.

Achievements

India needs to **improve the overall productivity of ruminants**, especially milk-producing cattle and buffalo. It can do so by more effective and efficient use of feedstuffs, including cereal straws and other waste by-products. Scientists working in a project to improve the efficiency of feed utilisation have developed technology for preparing feed supplements that comprise bypass proteins (which are not digested by bacteria in the rumen, but by enzymes further down the gut) and fats produced from by-products such as oilseed meals, groundnut and palm oil cakes/residues. In trials undertaken in cows and buffaloes in the states of Gujarat, Haryana, Orissa and Kerala, feeding 1 kg per day of bypass protein supplements, compared with 1 kg of untreated meal, increased milk yield, fat and protein content and lifted the incomes of village dairy farmers. The tangible economic benefits of these feeding trials has led to the design, construction and operation of a commercial plant capable of producing up to 50 tonnes per day of bypass protein feed supplement.

ACIAR has contributed to the development of no-till systems for wheat in India, and now

Rice on raised beds at ICAR-POSCR experimental farm in India

preliminary research suggests **no-till rice** can also be grown. This would substantially boost the benefits of no-till wheat, which are often subsumed by tillage and puddling in rice cultivation. A project is aiming to improve the productivity of direct-seeded rice through the application of improved weed and crop management technologies, and thus minimise the yield gap between wheat and rice. Trials are underway at several sites. Studies on sowing time of direct-seeded rice undertaken at the Experimental Farm of the Rajendra Agricultural University in Bihar revealed that long- and short-season varieties perform very differently in response to delayed planting time. In the long-season variety, grain yield declined significantly with delayed seeding, but short-season varieties performed better. Therefore, selection of appropriate varieties for direct-seeded rice appears to be pivotal to the success of the project.

In West Bengal, drying maize and rice is inefficient and unreliable, and more attention is needed to remove moisture and maintain quality during storage and transport. In an attempt to modernise the region's grain industries a project has been commissioned to **design and introduce drying systems** that reduce risk of loss of grain quality after harvest. The project team has constructed a two-stage drying system that comprises a fluid bed first stage for rapid removal of moisture down to around 17%, followed by a slower in-bin system to achieve safe storage levels of moisture content. Laboratory-scale units for both drying processes were constructed and tested for performance. Now a commercial prototype two-stage dryer, based on the laboratory-scale units, has been constructed by a local fabricator and installed in the Burdwan Government Seed Farm as a demonstration unit for drying paddy rice seed.

The East Indian plateau, covering three Indian states, receives high rainfall (in excess of 1,200 mm per year) but 80% of this falls in the monsoon months between June and September. Despite the high rainfall, water shortages are a problem, with high runoff and little, if any, water harvesting practised. Cropping intensity is low, with only one crop per year, timed to maximise available water. A project is **introducing watershed management**, including water harvesting, and is testing new cropping and agronomic practices to improve livelihoods in this poor region of India. In the first step to develop a watershed development plan, PRADAN (an NGO) is undertaking socioeconomic 'mapping' to ascertain the resources available and list the constraints to development. PRADAN has also produced a 'resource map' of the Pogro watershed. A conceptual model for hydrology of small watersheds has been developed, and this could form the basis for modelling that will develop criteria for either assessing the suitability of small watersheds for development, or for the planning, design and installation of water-harvesting measures.

Culturing shrimp is a potentially lucrative industry in both Asia and Australia, but many Asian farmers have seen profits eroded by disease outbreaks. The pathogen of greatest concern is **white spot syndrome virus (WSSV)**. A clearer understanding is needed of WSSV transmission sources and routes, such as infected seed stock. Polymerase chain reaction (PCR) methods for screening are often limited, particularly on-farm, and a project is making PCR screening more effective. A major experimental component is a longitudinal study of shrimp ponds in the West Godavari District of Andhra Pradesh, India. The aim is to obtain information on the quality of PCR screening results available to farmers and to use molecular epidemiological analysis to trace the sources of disease outbreaks in ponds. Farmers participating in the study are members of 'aquaclubs' formed as part of an ongoing extension program of best management practices. Their farms were stocked with PCR-screened postlarvae (PLs) obtained from local hatcheries. When shrimp were PCR-tested the results indicated there

was a very high prevalence of WSSV infection in the study ponds, with a high proportion of moderate–severe infections. A small number of nursery ponds were pinpointed as the source of seed for a high proportion of disease outbreaks during grow-out, and they are highly likely the weak link in current disease-management practice.

Agricultural knowledge, science and technology (AKST) have played key roles in reducing poverty. When they produce outcomes such as the Green Revolution, the benefits can be widespread. But would similar outcomes, if produced today, result in similar benefits? And what would be the pathway for delivering them to the world's poor? An ACIAR project involving The World Bank and IFPRI is attempting to answer these and related questions, in order to determine appropriate pathways for development and for disseminating information to promote agricultural advances. The project goal is to provide policymakers with options of alternative policies and investments for AKST. Using an expanded model proven in past research, a series of scenarios of future opportunities and alternative pathways for development is being described, with particular reference to India and China. Each scenario, presented with associated storylines, is being analysed prior to posting the results via the Internet for policy- and decision-makers.

Women in Rajasthan collecting water from the village well

Pakistan

Active projects in 2006–07	9
AOP budgeted expenditure in 2006–07	$2,007,239
Actual expenditure in 2006–07	$1,658,786
Expenditure in 2005–06	$1,045,668
Expenditure in 2004–05	$506,033

Dr Kuhu Chatterjee, ACIAR Country Manager , Pakistan

Key performance indicators	Performance 2006–07
Agriculture Sector Linkages Program (ASLP) components implemented that address Pakistan priorities and make optimal use of Australian technical expertise	Three projects in mango production, mango supply chain development and citrus production have been implemented. The design for a fourth project on increasing dairy extension effectiveness was completed and is due for implementation in 2007–08.
Government of Pakistan (GoP) funded program to disseminate bed-planting technology in other maize–wheat growing regions initiated	A five-year, $11-million GoP program, aimed at establishing 1,000 farmer cluster groups based on the model trialled and using technology developed by ACIAR, was established.
Proof-of-concept of serial biological concentration of irrigation drainage water providing the basis for piloting in other districts of Punjab and Sindh provinces	While two pilot sites were successfully established, the original serial biological concentration concept did not work as well as anticipated.
Forty percent of new projects designed to have farmer or policy impacts within five years of completion	The supply chain development project is specifically designed to achieve early impacts. Projects on mango and citrus production are classified as medium-term impact projects, but have elements that lend themselves to rapid dissemination and uptake by farmers.

Position

Pakistan has been an ACIAR partner country since 1984. In Pakistan, there is increasing pressure on availability of water resources for irrigation due to competing demands from urban and industrial uses. Soil and water salinity and drainage problems are placing additional pressure on irrigated agriculture. Given the similarity of some of Australia's water resource and salinity issues, Australia is very well placed technically to assist Pakistan in addressing the above issues. As a result, ACIAR's program continues to focus on irrigation, drainage and salinity management in the major cropping systems. Some of the technologies developed comprise the introduction of salt-tolerant forage species from Australia to Pakistan and the use of eucalypts to assist in drainage of shallow water tables.

In addition, there is recognition that Australia also has skills in some of Pakistan's key horticultural crops, mainly citrus and mangoes, the two most important tree crops. Australia can provide expertise in a

'whole-of-systems' approach to increase the productivity and competitiveness of the mango and citrus industries, encompassing fruit-to-market strategies.

Pakistan is also one of the world's largest milk producers, slightly less than half of which is produced from dairy cattle. Unit animal production is very low, although genetic potential is quite good. Major opportunities exist for applying Australian expertise in animal nutrition and the integration of forage production into farming systems to assist in improving milk production, a key to poverty reduction particularly for some of Pakistan's landless.

Achievements

Under the auspices of the **Agriculture Sector Linkages Program (ASLP)**, the Pakistan program is focusing on two thematic priorities: horticulture and dairy. Water is also a cross-cutting theme, which underpins these priorities as well as linking the expanded Pakistan program to earlier ACIAR-funded research. The focus of the past year has been to complete the design of four R&D projects. New projects were developed for the mango and citrus sectors and in the dairy-production sector. A dairy knowledge fair was jointly organised with Austrade in Lahore in February 2007.

The sustainable development of the mango industry in both Pakistan and Australia has been hampered by a **shortage of high-quality fruit** for export. In addition to postharvest handling and storage, disease and pest losses, variable productivity due to orchard management issues, and market-access challenges constrain development of the mango industry. A project seeks to establish 'clean' mango nurseries so that high-quality planting material is made widely available to the Pakistan industry. The project is also developing improved tree husbandry and management options to produce sustainable yields and quality fruit; to develop improved detection and management strategies for mango sudden death syndrome (MSDS) and other major diseases of mangoes; and to build research capacity in the mango industry.

Much of Pakistan's fruit and vegetable production, including mangoes, is not fully utilised, due to poor harvesting, handling and other postharvest practices. A project is addressing key constraints currently limiting the **efficiency, effectiveness and competitiveness of supply chains** for Pakistan mangoes. It aims to improve and maintain mango quality from harvest to consumption by identifying present market needs and likely future opportunities for Pakistan mangoes, through analysis of existing supply chains and the development of improved supply chain management systems and practices.

Pakistan has set an **annual export target for citrus** of 500,000 tonnes within the next 5 years, and $300 million in export earnings by 2013, but some key constraints need to be addressed to achieve these ambitious targets. A new project has been developed after an ACIAR-supported scoping study outlined key constraints to a more productive citrus industry. Its principal aim is to improve mandarin and orange productivity in Pakistan (and Australia) through improved nursery production practices, demonstration of 'best practice' orchard management, and enhanced research, extension and production capacity of Pakistan citrus institutions and industry.

Severe epidemics of **plant diseases caused by geminiviruses** have emerged in recent years. Australia and Pakistan have collaborated to learn more about them and particularly their effect on cotton and tomato crops. The upsurge in the occurrence of geminiviruses is linked to the spread of their vector, the whitefly Bemisia tabaci. Epidemics in Pakistan during the 1990s were especially severe, with huge losses in cotton and related industries, while in northern Australia the prospect of large losses through

geminivirus of tomato is increasing. From field surveys and complementary work on virus characterisation the scientists have found that cotton leaf curl disease (CLCuD) in Pakistan can actually be caused by several different viruses. Virus disease complexes were also identified from leaf curl diseases of tomato, chilli, cucurbits, okra, papaya and the yellow vein disease of the weed *Ageratum conyzoides* (which acts as a reservoir of infection for cotton crops). In parallel with the cotton work, understanding of the tomato leaf curl disease and spread has been enhanced in Pakistan, AVRDC (The World Vegetable Centre) and Australia. The outcomes of this project will be used in plant-breeding programs aimed at producing geminivirus-resistant cultivars of cotton and tomatoes.

Residue burning is widespread in rice–wheat systems of Pakistan, causing serious air pollution and loss of nutrients. In response to this problem, the Farm Machinery Institute (FMI) of the Pakistan Agricultural Research Council (PARC) in Islamabad recently designed and built a prototype machine (the 'FMI Seeder') for **direct seeding wheat into rice residues**, in a single operation based on a similar machine developed in another ACIAR project in the Punjab. However, while the problem has almost been solved mechanically, there are a number of agronomic issues to be resolved to achieve good establishment and crop performance. A project is evaluating and refining the technology for a range of stubble, soil and seasonal conditions, and developing guidelines for achieving good establishment, efficient use of nitrogen fertiliser and high yields in rice–wheat and alternative systems. The project is making progress in further developing the machinery and establishing operational guidelines for the novel seeder, in preparation for its commercialisation and widespread distribution.

The ASLP mango project team undertaking a grower field consultation in Pakistan

Bangladesh

Active projects in 2006–07	7
AOP budgeted expenditure in 2006–07	$405,500
Actual expenditure in 2006–07	$413,045
Expenditure in 2005–06	$371,464
Expenditure in 2004–05	$243,712

Dr Kuhu Chatterjee, ACIAR Country Manager , Bangladesh

Key performance indicators	Performance 2006–07
Technical and economic feasibility of wheat production examined in southern Bangladesh, and options for further research and development determined	The study confirmed the long-term financial and technical feasibility of growing wheat as a rabi-season crop on residual moisture. ACIAR commissioned a project to underpin the further expansion of wheat into rice-fallow systems, with strong participation of NGOs.
Integrated legume research program designed and initiated	A project aimed at expanding production of rabi-season chickpeas and lentils was initiated in the north-west of Bangladesh.

Position

Bangladesh has been a partner country since the mid 1990s. ACIAR's program is small, given Australia's relatively limited comparative advantage to deal with Bangladesh's rice-dominated agricultural problems.

Projects have focused on constraints to broadacre crop production (especially the rice–wheat cropping system) and potential for increased inclusion of a legume component in cropping systems. One project addresses diseases of these legumes.

A completed project on management of Hilsa fisheries led to a series of management recommendations that will require difficult decisions to be made by the Government if the fishery is not to risk collapse.

Most recently a project analysing the fate of arsenic from groundwater has produced useful information that has contributed to a larger initiative on the arsenic problem in Bangladesh.

Achievements

Current collaboration is mainly in the production and management of grain crops. Botrytis grey mould (BGM), considered **the most important foliar disease of chickpeas** in Bangladesh, has caused a substantial decline in chickpea production over the past decade. A project has screened a wide range of chickpea germplasm (including closely related wild species) for resistance to BGM under field conditions in Bangladesh and Nepal to provide a sound basis for genetic enhancement of host-plant resistance to BGM. Field screening to identify chickpea lines with resistance to BGM took place in Bangladesh over four seasons. There were clear differences in reaction to BGM, as measured on a 1 to 9 rating scale at each location in all seasons. A series of on-farm trials was conducted in Bangladesh to evaluate various components of disease and crop management under farmers' conditions and merge them with the evolving integrated crop management (ICM) package for chickpea. Using the results gathered in the 2002–03 season, the project has assembled ICM packages, incorporating

best-bet technologies for BGM management along with other optimum agronomic packages, and these have been tested in farmer-managed operational scale plots and compared with adjacent plots where prevailing farmers' practice was followed. The trials found yield increases in five districts due to ICM were around 20–50%.

In the past, lands in southern Bangladesh were considered **too risky for rice–wheat rotations** because of the hot, short-season rabi (dry-season) environment and, in some districts, the saline soil profile and limited water resources. Only recently have these southern lands been reconsidered for rabi-season production of crops such as wheat, maize and mungbean, using supplementary irrigation from limited surface water stored over from the wet kharif season. ACIAR funded a scoping study to assess the long-term technical and economic feasibility of rabi wheat production. The study provided justification for continued R&D investment in rabi-season crops on currently fallow lands in southern Bangladesh. Specifically, the study noted that water resources of southern Bangladesh needed to be characterised to determine their potential availability for irrigation, their distribution, and the types of water bodies and their quality. Salinity levels have the potential to affect wheat production, and tolerance of current and improved varieties to salinity needs further investigation. More work is also needed to adapt agronomic practices, especially the timing and amounts of fertiliser and irrigation, in order to increase ecological sustainability, profitability and yield.

A locally manufactured power-tiller, zero-till drill

Other countries

Active projects in 2006–07	9
AOP budgeted expenditure in 2006–07	$492,928
Actual expenditure in 2006–07	$528,434
Expenditure in 2005–06	$68,131
Expenditure in 2004–05	$436,885

Key performance indicators	Performance 2006–07
At least five Iraqi scientists receive in-depth training in integrated pest management (IPM)	Five Iraqi scientists were trained by CSIRO and Queensland Department of Primary Industries and Fisheries for 5 months of intensive IPM.
CIMMYT wheat lines identified with improved yield and/or disease resistance to local lines in field trials in Afghanistan	Eighty-two promising bread-wheat lines were advanced, based on both yield and disease resistance as evaluated in multi-site yield trials.

Bhutan

Position

ACIAR's small program with Bhutan began in 1998. Because of Australia's relatively low comparative advantage, the program has remained small. Earlier ACIAR research to develop Newcastle disease vaccine for village chickens was extended and adapted for the situation in Bhutan with the help of AusAID funding, and projects were initiated on the management of fruit flies, and on footrot management in ruminants. A major initiative on improvement of citrus protection and pest and disease management is under design.

Achievements

A new project aimed at improving mandarin production in Bhutan and Australia through the implementation of on-farm best management practices commenced in April 2007, as part of the Bhutanese Government initiative to substantially increase the country's production of citrus (mainly mandarin). This project seeks to lift overall productivity of Bhutan's citrus on a sustainable basis and to improve the quality and yield of its present mandarin cultivar.

A short-term scoping study commenced in May 2007. Its main purpose is to make recommendations to the Royal Government of Bhutan on possible actions for improved land and water management practices, specifically in relation to surface water and watershed protection, water harvesting, improved cropping/farming practices and improved water-use efficiency.

Bhutanese women on the way to the village market

Nepal

Position

Almost 85% of Nepal's population of 24 million are rural and the majority of these are involved in agriculture. ACIAR formerly had a small program of projects in Nepal, with an emphasis on the lowland Terai, which has more in common with Australian agricultural production environments than upland areas. The discipline focus for collaboration has emphasised crop production and management, and some aspects of animal health. ACIAR-funded research has made progress in the fields of crop and livestock health and productivity and land management. Benefits to date include the development of a specific vaccine that has effectively targeted the two strains of virulent footrot existing in Nepalese sheep and goats; the introduction of new varieties of lentils resistant to disease and drought; and the identification of factors in wheat sterility (low temperature and boron limitations).

However, ACIAR is no longer developing any new projects with Nepal.

Achievements

Scientists have continued investigation of fungal wilt and Stemphyllium (a damaging leaf and stem disease) in lentil, seeking to identify tolerant lines for use as genotypes for direct release or as parents in breeding programs in Nepal and Australia. They have also investigated the efficacy of seed priming for improving seedling establishment, vigour and yield in lentil post-rice ('paira') cropping systems in Nepal. The technology is being extended to farmers through on-farm demonstrations and seed increase of promising genotypes. The project has advanced the development of new Lathyrus germplasm with low toxin to make it more suitable as food for humans and livestock in Nepalese conditions, giving new impetus for inclusion of this crop in farming systems there.

Animals on the Nepalese terraces provide fertiliser

Afghanistan

Position

Two decades of war coupled with a recent severe drought devastated Afghanistan's food-production capabilities and depleted critical seed stocks, leaving the nation heavily dependent on food aid from international donors.

ACIAR's multilateral projects in Afghanistan provide short-to-medium-term support to wheat and maize production, wheat being by far the most important crop and maize the third most important. The objective of the project is being achieved principally through provision of seed of suitable cultivars via import, establishment of on-farm participatory testing of imported germplasm for the identification of better-adapted improved cultivars, and local multiplication and distribution of improved cultivars. Particular attention will be paid to improved yellow rust resistance in wheat and to promoting improved crop management along with improved cultivars of both wheat and maize. The capacity of local NGOs, state scientists and farmers will benefit. The project is co-funded by AusAID, managed by ACIAR and executed by CIMMYT.

Achievements

Despite the logistical difficulties and the difficult security situation in some parts of Afghanistan, the project 'Wheat and maize productivity improvement in Afghanistan' has progressed successfully. In collaboration with researchers in the Agricultural Research Institute of Afghanistan (ARIA), 126 promising wheat and maize varieties have been identified, six of which are potential candidates for official release nationally. Promising varieties, as well as appropriate crop-management practices, are being demonstrated on-farm in collaboration with a strong network of NGOs and government partners.

There is strong anecdotal evidence that the varieties introduced by the project are being adopted. This is particularly evident in Alingar district in the Laghman province, where the project works in collaboration with farmers and the Norwegian Project Office, and where a double cropping of improved wheat and maize varieties introduced by the project is potentially beneficial to the farmers. Such a combination improves the productivity of wheat-based cropping systems and provides farmers with a viable option to replace poppy production. Finally, the project has made

Inspecting crops in Afghanistan

good progress towards developing a strong core team of well-trained national scientists working in the public, private and NGO sectors.

Afghanistan is also involved in the ACIAR-supported activities at CIMMYT, ICARDA and PBIC–Sydney University to ensure productivity and food security through sustainable control of wheat yellow rust in Asia.

Iraq

Position

The high levels of input subsidies, guaranteed commodity prices and free food distribution have distorted agricultural markets in Iraq and have provided no incentive for innovation by farmers. In addition, scientists have had limited access to international developments in the agricultural sector for over two decades. In concert with other investments by AusAID, the ACIAR projects are intended to assist the Iraqi Government in its quest to modernise agricultural markets and production systems.

The projects have been shaped by the relevance of Australian expertise to Iraqi conditions and by the constraint of limited access to Iraq by Australian scientists. One project will focus on the enhancement of barley, wheat and grain legume production under dryland conditions in northern Iraq through the introduction and evaluation of appropriate modern varieties, coupled with the adaptation of improved management practices, including tillage, fertiliser and weed control. Significant yield improvements are anticipated, given that current yields of these crops are only about one-third that under similar conditions in developed countries. In the second project Australian scientists will initially assist Iraqi senior scientists to develop a National Strategy Plan for the control of jasmine whitefly affecting citrus production in central Iraq, and follow this with training in Australia of junior scientists in integrated pest management practices to enable them to implement that plan upon return to Iraq. The projects are co-funded by AusAID and ACIAR, managed by ACIAR and executed by ICARDA and Australian research organisations.

Achievements

The **jasmine whitefly project** has concluded. As recorded in last year's annual report, a strategic plan for the management of jasmine whitefly and also the dubas bug in the date palm/citrus complex of central Iraq has been submitted to the Iraqi Government and formally accepted. How to act on the plan will require considerable further discussion, planning and development. Five Iraqi scientists have spent time in Australia, three located with the Queensland Department of Primary Industries and Fisheries to work on active integrated pest management projects, while a further two were located at CSIRO Entomology in Brisbane working as part of the silverleaf whitefly biocontrol program.

Another project has sought to develop better crop **germplasm and management** for improved production of wheat, barley, and pulse and forage legumes in Iraq. Despite many difficulties, the project has gone remarkably well, facilitated by the enthusiasm, flexibility and dedication of Iraqi collaborators, the proximity of ICARDA in Syria, and the interest and support of ICARDA and Australian scientists. An agreed work plan for the demonstration program has been carried out as planned at 13 locations in the four main agroclimatic zones. However, heavy rain,

Jasmine whitefly

security concerns, land disputes and transport shortages have reduced from 80 down to 30 the planned research trials evaluating better adapted lines/varieties.

On-farm demonstrations of improved varieties were conducted as planned in the following types of location: three high-rainfall areas; four medium-rainfall areas; three low-rainfall areas; three with supplementary irrigation. Best-bet technologies and new lines/varieties were tested and demonstrated with farmers in a participatory manner at these sites.

In project-linked research at ICARDA, a range of lines/varieties of oats, peas, canola and other oilseeds from Australian collaborators was introduced and tested for adaptation and use in Iraq. Some varieties grew and seeded very well. The trial was inspected and discussed with several groups of visiting Iraqi scientists, and seed from material of interest in Iraq and ICARDA was collected for broader testing.

The project has re-established international linkages amongst Iraqi, ICARDA and Australian scientists. Twenty-six Iraqi scientists have participated in six ICARDA training courses, and there were several visits by others to discuss and plan project activities. Australian collaborators have presented four seminars of relevance to Iraq, covering advances in cereal and legume improvement, crop management and crop–livestock interactions in Australia.

North Asia

Financial year	Regional expenditure	Percentage of total bilateral expenditure	Board target as percentage of expenditure
2006–07	$2,876,548	8.3	<15%
2005–06	$3,857,431	12.5	<15%
2004–05	$4,233,310	15.1	<15%

ACIAR's program in North Asia concentrates on China. For the region an expenditure target of not more than 15% of our overall annual bilateral research expenditure has been set.

China

Active projects in 2006–07	31
AOP budgeted expenditure in 2006–07	$3,225,574
Actual expenditure in 2006–07	$2,876,548
Expenditure in 2005–06	$3,733,227
Expenditure in 2004–05	$3,926,454

Ms Catriona Murray, ACIAR Country Manager, China

Key performance indicators	Performance 2006–07
Significant co-investment by Chinese partners in all new projects	All new Chinese projects incorporate Chinese funding and in-kind contributions.
Medium-term strategy for program in Tibet Autonomous Region developed and agreed between ACIAR and Chinese counterparts	Medium-term strategy for the Tibet Autonomous Region has been developed, which will focus on the development of the crop–forage–livestock systems in the valley regions.
Communication of results of analysis of technical barriers affecting trade communicated to Chinese policymakers	For a multilateral project addressing technical barriers affecting trade of China, the methodology and empirical applications have been presented to policymakers through published papers and international conferences.
Evidence of integration of biophysical and policy considerations in development of grassland management strategies	A framework was developed, including a feed balance analyser and a biophysical/economic analysis using data on quantity and quality of forage sources, enterprise budgets and linear programming, to identify the optimal combination of resources for alternative farm strategies. Field work detected further development of livestock markets and improving price signals for farmers.
Forty percent of new projects designed to have significant farmer or policymaker impacts within five years of completion	Only one new standard project commenced in 2006–07 and it was deemed likely to have impact in 5–10 years. Three small R&D activities commenced and two of these should have significant community impacts within 5 years.

Position

ACIAR has had a program with China since 1984. Major areas of research have included agricultural water management, selection of Australian trees suited to Chinese forestry, improvement and integrated pest management in brassica crops, studies of livestock production and diseases with a focus on sheep and wool, quality management in stored grains as well as broadacre crop and citrus improvement. Adoption of conservation tillage in some central western provinces has been recognised as part of the solution to improve crop management and reduce windblown dust in Beijing. In 1999, the focus of ACIAR's program shifted towards western China, in line with the need to raise farmers' incomes in this part of China and to better manage land and water resources.

In view of the significant human and financial resources available within the Chinese National Agricultural Research System and the strong mutual benefits to Australia, ACIAR requires that projects in China have significant sharing of costs by Chinese and Australian research providers. In many cases,

ACIAR will seek a funding commitment through case-by-case exchanges of letters at the stage of development of full project proposals. Only a small proportion of the highest priority projects can be supported. Projects chosen must:

- address the highest priority of Chinese partners
- address overall Australia–China development policy (to 'Further mutual interest by supporting China's balanced development policies and working together in the region'*)
- complement other schemes for China–Australia collaboration, including the AusAID Australia–China Environment Development program, to commence in 2006
- be in areas where the overwhelming driver is Australian technical comparative advantage
- complement rather than duplicate activities of other (larger) donors.

Within our stated priority areas, ACIAR will also fund small investments that foster collaborative linkages between activities that have been primarily funded from Australian and Chinese sources.

ACIAR projects form only one part of the China–Australia inter-governmental cooperation in agriculture and natural resource management. Some information on the other programs, several of which provide financial support for collaboration between Chinese and Australian agricultural researchers, follows. Most of these programs operate through annual calls for applications.

- Department of Agriculture, Fisheries and Forestry (DAFF) in Australia and the Chinese Ministry of Agriculture jointly administer the **Australia–China Agricultural Cooperation Agreement** (ACACA, www.affa.gov.au/acaca), which provides funding for agriculturally oriented exchange projects between Australia and China. Projects from researchers, businesses, industry associations and farmers that help develop trading relationships, enhance cooperation in a wide range of agricultural sectors, provide a forum for the exchange of scientific information and, especially, encourage commercial linkages are encouraged. The focus of the present program is on projects that demonstrate potential for commercial outcomes and provide clear flow-on benefits to industry. Over 175 projects have been completed since 1984.
- Australian Government Department of Education Science and Training (DEST), 'International Science Linkages program' (www.dest.gov.au/science/isl) includes competitive grants under the **Australia–China Special Fund for S&T Cooperation**, in which agriculture, biotechnology and environmental research form three of the priority areas. The Australian Government through DEST has also provided funding to support a new Australia–China Centre on Water Resources Research. The centre will increase research networks between Australian and Chinese scientists and promote multidisciplinary research collaboration into water resources in both countries. Finally, the first exchanges under the DEST-managed Australia–China Young Scientist Exchange Program will commence during 2006–07.
- In addition **DEST** supports international exchanges, targeted scientific and technological individual visits, missions and workshops to promote scientific and technological collaboration. These are managed by the Australian Academy of Science (www.science.org.au/internat/index.htm) and the Australian Academy of Technological Sciences and Engineering (www.atse.org.au).
- Food Standards Australia and New Zealand and the Chinese Ministry of Science and Technology recently entered into a Memorandum of Understanding on **Scientific and Technological Cooperation in Food Safety**.

* Source: China–Australia Country Program Strategy 2006–2010, AusAID, November 2005.

- The **Joint Declaration on Bilateral Cooperation on Climate Change** between the Australian Greenhouse Office (Department of Environment and Heritage, DEH) and the National Development and Reform Commission for China (www.deh.gov.au/minister/env/2003/mr24oct203.html) sets out cooperation in technology development and policy. During 2006, DEH will release the 'Australia–China Climate Change and Agriculture Research Prospectus' and fund several projects, of which at least one will be co-funding of a project managed by ACIAR.

From the Chinese side, the **State Bureau of Foreign Experts Affairs of China** is responsible for accrediting international educators in China and for identifying and negotiating training opportunities across the world that will be of benefit to China. The related China Association for International Exchange of Personnel (www.china.org.cn) is a government-sponsored institution also engaged in the international exchange of specialised technical and managerial personnel in several areas, including agriculture, science and technology.

Achievements

ACIAR projects in China are grouped under the following major themes:

- sustainable agriculture in north-western China
- improved agricultural productivity in Tibet Autonomous Region
- implications of Chinese trade developments for smallholders
- China linkages scheme.

China's western grasslands support the livelihoods of 40 million people, many from ethnic minorities. Income levels are amongst the lowest of any Chinese farmers. Grasslands are heavily degraded due to overgrazing, and have led to frequent dust storms, siltation of the Yellow River and declining biodiversity. A project aims to help **rehabilitate the grasslands** and improve smallholder incomes. Initially a model of the farming system is being developed, to evaluate technical and policy options to improve system sustainability. A Stage 1 model aims to create a realistic picture of what is occurring on the farms, while a Stage 2 model is designed to identify the optimal combination of resources for alternative farm strategies. Using this framework the project team is ranking the choices available for research and farm improvement. The Stage 1 and Stage 2 models are now considered robust, and have become teaching tools for Chinese colleagues. The team is now working on the Stage 3 model, looking at the sustainability of the farm

Relationship to the AusAID China strategy

AusAID's new China strategy for 2006–10 has the goal of furthering mutual national interest by supporting China's balanced development policies and working together in the region. It has the three strategic objectives of building capacity in selected sectors in China, in particular governance, environment and health; enhancing the Australia–China relationship by building institutional linkages; and working collaboratively to strengthen the region.

ACIAR's China program, while maintaining a focus on sustainable resource management in poorer western regions, reflects the strategic objective of building capacity in China, with a strong focus on capacity enhancement in technical and policy issues relating to the environment as it is either affected by agricultural production or in turn affects production sustainability. Governance and collaboration in the region are addressed by a second major emphasis on agricultural development policy issues, particularly relating to trade policy and environmental management. The basis of ACIAR's mode of operation in China is through the development of strong institutional linkages between Australian and Chinese government R&D and policy-making organisations, thus supporting the second strategic objective of the overall Australian aid program in China.

systems over a longer term, with emphasis on general relationships to estimate dust storm likelihoods and grassland stability in relation to the grazing pressure.

China and India are keen to **replace traditional rapeseed and mustard cultivars** with canola quality types (containing low levels of erucic acid and glucosinolate). They value Australia's canola quality *Brassica napus*, which is better adapted to their countries than varieties from Europe or Canada. But a number of key diseases and environmental stresses limit oilseed brassica production in India, China and Australia. A project seeking to develop *B. napus* (rapeseed) and *B. juncea* (Indian mustard) germplasm with improved canola quality, disease resistance (to *Sclerotinia*—white rust) and improved drought tolerance has screened germplasm to reveal some key characters that will be beneficial to the breeding of improved lines for each country. The project team has found white rust resistance in Australian and Chinese *B. juncea* lines, low erucic acid and low glucosinolate levels in Chinese and Australian *B. napus* and *B. juncea* lines, and drought tolerance in Australian *B. juncea* lines. A project designed to develop **varieties of lucerne** with high levels of tolerance to adverse factors such as salinity, acid/aluminium soils, waterlogging or drought now has produced advanced lines with aluminium resistance. Aluminium screening has continued through several generations, and each successive generation has shown increased tolerance over the previous generation. Further selections are continuing with the aim of releasing a cultivar in 2007. The evaluation of the material in pot experiments with acid soil has continued as well as field trials of the early acid-tolerant progeny. The acid/aluminium screening method has been adapted to screen both plants and rhizobia for nodulation at low pH. This is an important advance as acid-tolerant rhizobia are important for the success of lucerne in acid soils.

Transporting lucerne

The Hexi Corridor, a distinct valley in Gansu in north-western China, relies on snowmelt for much of its water. Recent reduction in snow fall has seen farmers and others turn to available surface water, which is lowering recharge and at the same time lowering the watertable. Local policymakers have implemented water restrictions, rationing allocations and increasing water and pumping costs. This is adding to the number of other pressures already faced—high input costs, low mechanisation and low incomes—particularly by smallholders. A project is encouraging **the adoption of permanent raised cropping beds** for wheat–maize rotations, including adapting existing tractors and improving agronomic and water management, to help alleviate many of these issues. The Gansu Agricultural Mechanisation Bureau (GAMB) has established the first of three demonstration sites to compare permanent raised beds, zero-till and conventional farming practices. A related project is underpinning the work by helping to develop criteria for **optimising bed design**, using analytical and numerical modelling of water and solute transport, designing placement strategies to maximise fertiliser usage and minimise leaching to groundwater; and determining the conditions most likely to lead to salinisation.

In the Tibet Autonomous Region the activities of small mammals, **particularly the plateau pika**, have degraded up to 15% of the region's valuable grassland ecosystems. Livestock numbers on the plateau have more than doubled in the past 50 years, but livestock carcass weight has declined in this time, suggesting that the system has been pushed so that animal productivity is declining. At the same time plateau pika numbers have increased, due to some factor in the system that has changed to their benefit. A project has sought the reasons for the increase, postulating either a change in pasture composition and/or structure or improved burrowing conditions due to increased erosion. Recommended control techniques for the pika include a reduction in livestock density to prevent the system degrading further and moving to the highly degraded 'black soil' state.

In a project aimed at **intensifying production of grain and fodder in central Tibet** farming systems, excellent progress has been made in developing baseline information on Tibetan agriculture. The project team conducted interviews in 45 different farming households across central Tibet's cropping zone, exploring demographics, farm resources, the components of cropping and livestock enterprises, and associated inputs and outputs. Attitudes to fodder production and system change were also assessed. These results have provided a more accurate picture of the typical Tibetan farm, which is assisting the project's ongoing research work and providing a foundation for future efforts in extension. In related work an Australian Youth Ambassador for Development has **described soils at key experimental sites**. Soil samples from farmers' fields across central Tibet were sent for nutrient analysis in Australia, revealing in initial assays that potassium and magnesium levels in Tibetan soils appear very low, and are a likely constraint to grain production.

A project that has studied the **implications of China internationalising its food economy** has also analysed how China joining the World Trade Organization (WTO) has affected the country's food policies. A general equilibrium model of the Chinese economy with regional dimensions (CERD) that included the eastern coastal, central and western regions described five agricultural subsectors. Findings consistently showed that the trade reforms China adopted in order to accede to the WTO will lead to substantial structural changes within the agricultural sector. In China, as in other rural-based countries, the main factors behind reductions

Inspecting a wheat crop in Tibet

in rural poverty will be the scope for rural households to earn off-farm income and for people to move from rural areas into industry and services in urban centres. Therefore, to a large extent, the success of the trade reforms will depend upon policies beyond agriculture.

These findings were reinforced by another project involving the International Food Policy Research Institute (IFPRI) in partnership with institutions in China. Together they have developed a **snapshot view of inequality** within and between rural villages in western China, based on a census-type household survey in three administrative villages and a sampling survey of 286 natural villages in the province of Guizhou. They found that, in contrast to coastal regions, **non-farm income** is distributed unevenly in this inland region and accounts for the largest share of overall income inequality. This finding has important implications for the future strategy in promoting development and poverty reduction in lagging regions. While overall economic development will be the main instrument to bring the majority out of poverty, a targeted approach will be increasingly crucial to help the development of these poor villages and households. It is imperative to understand why they are not participating in the growth process and how development strategies and various transfer programs would help them.

Two forestry projects are using the same plantations to undertake parallel research. They are both focused on **growing trees and processing timber** to provide a higher quality product for use in construction joinery and furniture in China (and also Vietnam). Poor yields result from growth stresses released upon sawing that cause distortion and splitting in logs, so eucalypts in many developing countries are mainly used for fuelwood, pulp and poles. One line of research is focusing on genetic and silvicultural controls to reduce losses. So far this project has initiated a wood-quality analysis along with an assessment of growth and form at an established spacing and fertiliser trial of cloned trees at Dongmen Forestry Farm. The initial analysis has enabled the research team to identify trees for further wood-quality assessment. Additional support from a Chinese pulp and paper company has extended the project to evaluate the **impact of silviculture on pulp wood production and quality** as well as the original focus on solid wood.

The other project is trialling **sawing and recovery strategies** to get the best from logs, with a particular focus on economic viability. Early in the project five scientists from China and Vietnam attended a training session at the Timber Training Centre in Creswick, Victoria, to gain more skills in

Plantation of eucalypts

eucalypt timber sawing and wood drying, and to learn processing research procedures. While in Australia they visited the University of Melbourne's Centre for Advanced Wood Processing and the CRC-Wood Innovations and were introduced to the microwave pre-treatment technology in solid wood processing. They also visited industrial sites in Victoria and New South Wales and intensively managed eucalypt farm forests in southern and northern Victoria.

ACIAR supports ongoing and new research and capacity-building activities at CIMMYT, ICARDA and PBIC–Sydney University to ensure productivity and food security through **sustainable control of wheat yellow rust** in Asia. The researchers have made significant progress in incorporating durable yellow rust resistance into several cultivars, but they found some cultivars deemed highly resistant in Mexico were either susceptible or just moderately resistant in China. They therefore devised a shuttle-breeding strategy whereby early generations were grown in Mexico then subsequent generations were grown in China, to speed up the breeding as well as select under high yellow rust pressure in China. This strategy resulted in more lines that were resistant and better adapted to the Chengdu environment. Moreover it developed local capacity to continue the work into the future.

ACIAR has invested heavily in the development of integrated crop management (ICM) systems for **growing brassica vegetables with minimal pesticide** application, using environmentally friendly methods. A recent project has developed world-class decision-support tools (electronic-based and paper-based) for China and Australia for improving the implementation of ICM systems in brassica crops at the farm level. It has built on existing research and extension activities in China and Australia (many of them developed with ACIAR funding). The Chinese toolkit comprises: 1) the Decision-support and Training Multimedia System for Integrated Crop Management in Brassica Vegetables, which is primarily for extension officers; 2) the paper-based Field Guide to Integrated Management of Crucifer Pests, Diseases and Disorders, designed for farmers. The Chinese toolkit is now in commercial production, and so far 8,000 copies of the field guide have been sold and distributed to farmers.

Peri-urban vegetable production is helping to **increase the availability and diversity of fresh vegetables** in the urban centres. But spoilage of vegetables remains a problem, with unacceptable levels of pesticide use and high postharvest losses from fungal and bacterial pathogens. Inadequate washing, grading and packing facilities contribute to the spoilage, as does limited options for disposing of wash-water and waste. Detection and monitoring of risk factors is possible, using polymerase chain reaction (PCR) technologies that apply to both vegetables and wash-water. A project has used PCR technology to test different washing and handling procedures, and also obtained basic information on the level of contaminating organisms on three vegetable types in the supply chain. The scientists also evaluated the influence of irrigation water on yield, rot susceptibility and quality, and investigated

Marketable produce has been increased through reduced vegetable spoilage in China

how poor plant nutrition lowered resistance of vegetables to postharvest disease and physiological deterioration. The project team has developed recommendations on washing of vegetables and developed a PCR test for rapidly detecting the presence of the bacteria *Enterococcus faecalis*.

The **FILTER (filtration and irrigated cropping for land treatment and effluent reuse) technique** was developed by CSIRO for Australia to overcome some of the problems in land treatment of wastewater. The system was successfully tested on clay soils, treating primary or secondary sewage, and the extracted water and nutrients used for intensive annual crop-growing. However, FILTER needed performance-testing on non-clay soils and with different wastewaters, and this has been achieved through an ACIAR project. Results of trials in both Griffith, Australia and Wuqing, China, confirmed that when the FILTER system is installed at sites featuring soil with a high capacity for phosphorus uptake, with a stable soil structure to maintain hydraulic flows and appropriate groundwater conditions, it can reduce pollutants markedly and make the drainage water suitable for reuse (other than for human consumption).

A small R&D activity is supporting collaboration between Australian and Chinese rice breeders in the development of **cold tolerance in rice** varieties for both countries. This is a very high priority issue for both Australia and China. In addition, Australia is transferring new molecular marker technologies to help China boost its cold-tolerant activities. Cold-tolerant varieties will help reduce the substantial yield losses suffered in cold years in both countries, and they have another advantage of needing significantly less water in cold conditions.

Water is a major threat to the world's food security and ACIAR is working to improve water use in rural China

Southern Africa

Financial year	Regional expenditure	Per centage of total bilateral expenditure	Board target as per centage of expenditure
2006–07	$493,222	1.4	<5%
2005–06	$627,876	2.6	<5%
2004–05	$735,199	2.9	<5%

ACIAR's program operating in southern Africa concentrates on the Republic of South Africa. Some projects led by International Agricultural Research Centres in other countries are concluding. For the region an expenditure target of less than five per cent of our overall annual bilateral research expenditure has been set.

Republic of South Africa

Active projects in 2006–07	7
AOP budgeted expenditure in 2006–07	$474,624
Actual expenditure in 2006–07	$493,222
Expenditure in 2005–06	$627,876
Expenditure in 2004–05	$735,199

Key performance indicators	Performance 2006–07
Development of an initiative that aims to provide farmers using traditional cattle breeds with a sound market for their beef	Prices received for cattle owned by the emerging farming communities involved in the project have steadily improved as a consequence of their improved knowledge of marketing their stock and the feedlot buyers being aware of their meat quality. A new project will explore opportunity for partnerships with the retail sector.
Potential lablab and cowpea varieties identified to augment the dryland cropping systems in Limpopo province	On-farm field trials have been established in four districts in Limpopo and North West provinces.
Commercial fertiliser input sector providing appropriate services to emerging farmer markets	SASOL has registered small packs and is retailing fertiliser. In the first year, over 1,000 farmers acquired fertiliser in small packs, resulting in significant yield increases and estimated returns of $400 per farmer.
Methods optimised for the detection of polyploid acacias for plantation forestry	Less time-consuming identification tools were developed. Analysis of stomatal measurements were used to distinguish diploid, mixaploid and tetraploid plants. Near Infra Red Analysis also successfully separated diploids from polyploids in preliminary studies.
Forty percent of new projects designed to have significant farmer or policymaker impacts within five years of completion	Only one new project has been developed in southern Africa during the period and it is 'Category 1'.

Position

ACIAR has been involved with southern Africa since 1983, completing over 40 projects. Benefits to date have included the empowerment of individual and farmer groups to market and receive a fair price for their cattle, vaccines for Newcastle disease in chickens in several countries, a tick-resistance diagnostic test and a tick fever vaccine, selection of Australian trees for exceptionally difficult sites, identification of low-input fertiliser strategies for crops in risky environments, and demonstration that cattle breeds preferred by emerging farmers have equal growth potential to commercial breeds. The priorities and size of the investment by ACIAR have changed over time.

ACIAR has supported IARC projects—through the International Livestock Research Institute (ILRI), the World Agroforestry Centre (ICRAF), the International Institute of Tropical Agriculture (IITA), the International Crops Research Institute for the Semi-Arid Tropics

(ICRISAT) and the International Maize and Wheat Improvement Centre (CIMMYT)—in a number of African countries. The focus of IARC projects is now also exclusively on southern Africa.

Currently, the Republic of South Africa (RSA) is the sole focus of ACIAR's bilateral program. Australian technical knowledge and expertise is highly relevant because similar temperate, Mediterranean and subtropical production environments are found in the two countries. Further, Australia's advanced extension and farming systems capabilities are relevant in building local capacity to assist the development of the African farming sector.

This program is guided by the following principles:

- Our research partnerships must be focused on delivery of benefits to emerging African farmers.
- Projects will only be considered for RSA and will focus in areas where Australian scientists can add significantly to the skill base by filling 'gaps' in the existing South African expertise. In doing so, ACIAR will also look at synergies in our program with those of other South African and international funding agencies, and for potential Australian mutual benefits.

Achievements

Projects in RSA are largely grouped under the following thematic priorities:

- increasing the profitability and sustainability of crop–livestock farming systems
- efficient use of water and nutrients in cropping systems.

Australian acacias are amenable to genetic improvement and have shown large productivity increases through selection and breeding. However in certain regions they can be serious weeds. Triploids (plants with three sets of chromosomes instead of two) in agricultural and forestry crops are usually sterile and this can have the advantages of increased productivity, absence of seed to cause weed problems, and suitability for genetic modification without risk of genetic pollution through uncontrolled outcrossing to non-crop plants. A project to develop triploid clones of four Australian Acacia species and their hybrids for use in plantations in South Africa, Vietnam and Australia has made significant progress. Due to the complex nature of the expression of ploidy after induction, it has been necessary to devise a suite of protocols to efficiently and correctly identify the ploidy of an induced plant. Near Infra Red Spectrometry (NIR) has been successfully employed and ploidy identification is now cheaper and quicker, enabling the project team to scale up induction experiments in 2007–08.

The project to develop **profitable beef enterprises for previously disadvantaged farmers** finished, and has left a legacy of a large and growing number of motivated and trained farmers (and their partners) able to improve beef businesses and take control of negotiations to market their cattle. There is a learning and training strategy in place to help them continue to develop their farming skills and effectiveness. The project also completed a thorough research activity comparing traits for production and meat quality in indigenous South African cattle (Sanga breeds) with those of conventional commercial breeds (i.e. a mix of selected local, exotic and crossbreeds). It showed at a number of levels that, contrary to widely held beliefs, indigenous cattle produce meat that is the equal of that of most conventional breeds and is significantly more tender, and more commercially acceptable, than that of Brahman cattle. This information gives farmers growing these breeds a critical bargaining point in the marketing of their animals, and another advantage along with their other attributes of hardiness and tick resistance.

An emerging group of farmers in Limpopo province in South Africa's north needs to address problems of **unsustainable farming**

practices and land degradation. A project aims to develop forage and management strategies to assist such farmers. Project work planned on veld-based livestock production systems and cropping-based systems was modified after initial site inspections made it apparent that insufficient property size and forage limitations due to veld degradation (in particular bush thickening and loss of perennial grasses) were the most critical management problems facing the emerging farmer groups. With no viable pasture base, any objectives to promote advanced animal nutrition and marketing of better classes of stock are of doubtful viability. Therefore the development of legume fodder banks, which had been intended as the key project activity, was held back and the main focus of field and communication activities switched to veld monitoring, testing the feasibility of spelling animals, shrub control and other reclamation strategies to reclaim lost productivity of the pasture resources.

A project begun during 2006 has a focus on **increasing the incomes of smallholder wool producers** in South Africa's Eastern Cape. National and provincial efforts have attempted to improve wool and sheep management and wool classing, but the main constraint to continued growth is pasture quantity and quality. Pastures are generally small and do not support animal production as well as in similar conditions elsewhere. The project is introducing legumes adapted to such conditions, evaluating both native and non-native varieties.

Smallholder communities in South Africa aim for continuous improvement and innovation in their cattle farming systems

Multilateral program

Active projects in 2006–07	30
AOP budgeted expenditure in 2006–07	$10,069,029
Actual expenditure in 2006–07	$10,310,261
Expenditure in 2005–06	$10,002,356
Expenditure in 2004–05	$9,984,197
Proportion of total ACIAR expenditure 2006–07	17.8%

Key performance indicators	Performance 2006–07
Alignment with ACIAR's funding strategy for the IARCs	All IARC projects developed in 2006–07 focused on ACIAR mandated countries, areas of IARC comparative advantage, and aligned with ACIAR Annual Operational Plan and Centre Medium Term Plans.
Demonstrated project impacts (of an IARC project) as measured by formal evaluations undertaken by our Impact Assessment Program	Impact assessment study of sorghum breeding activities with ICRISAT showed that the rates of return to the research were a NPV of all benefits of US$42.9 million giving a B/C ratio of 31:1 and an IRR of 29%. Benefits to the capacity building estimated as US$38.6 million or 90% of the total benefits.

Position

ACIAR is responsible for administering, on behalf of the Australian Government, Australia's contribution to the International Agricultural Research Centres (IARCs). The IARCs are internationally funded, independent, non-profit institutions that carry out research and related activities to help achieve sustainable food security and reduce poverty in developing countries. Research-related activities cover agriculture, forestry, fisheries, policy and environmental management.

The goal of ACIAR's multilateral program is to ensure the effectiveness of, and benefits to, developing countries and Australia from agricultural research conducted by the IARCs with funds provided by Australia.

ACIAR's policy position for contributions to the IARCs involves:

- allocating around 20% of ACIAR's total appropriation to the IARCs
- allocating between one-third and half of ACIAR's annual IARC investment as project-specific funding, while half to two-thirds is allocated to core or unrestricted funding
- focusing the unrestricted funds on a reduced number of centres, based on comparative research advantages.

www.cgiar.org

Disbursement of multilateral funds, 2006–07

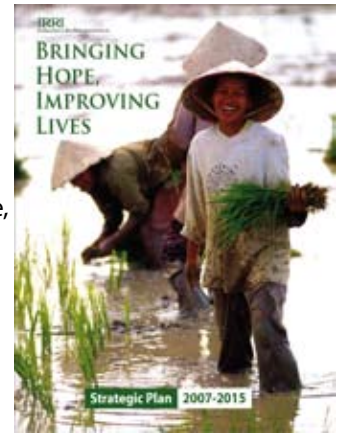
In 2006–07 contributions for core funding of IARCs amounted to 53.3% of actual multilateral expenditure. Project-specific funding accounted for 45.8%, with the remaining 0.9% of total multilateral research funding allocated to other regional support activities. Fourteen IARCs are also receiving core funding (untied to specific projects). The allocations are based on the comparative advantage of individual IARCs to deliver research applicable to Australia's regional priorities.

Of the 14 centres receiving core funding, four are located in the Asia–Pacific region and another seven have a mandate that covers staple crops in the region. The remaining two, CAB International (CABI) and the International Food Policy Research Institute (IFPRI), are responsible for research information systems and food policy respectively (see table on page 99).

Fourteen IARCs received project-specific funding through ACIAR this year. Twelve of the centres are associated with the Consultative Group on International Agricultural Research (CGIAR), while CABI and the World Vegetable Center (AVRDC) work in areas of agricultural development of particular interest to Australia (see table on page 99).

Project-specific research funding is designed to build tripartite research linkages, which allow scientists from IARCs, advanced research institutions in Australia and national agricultural research institutes in developing countries (particularly those that are ACIAR bilateral partners) to interact on specific issues.

Projects developed under project-specific funding arrangements operate as part of ACIAR's 13 discipline-based research programs. IARC projects complement and add value to the bilateral programs run by the discipline areas. Eight new activities were initiated and three completed in 2006–07. A total of 30 projects, including these, were active in 2006–07.



ACIAR also supports relevant CGIAR system-wide initiatives. These are cross-centre programs that link research complementarities of different centres to address and resolve global and regional issues through strategic research approaches.

The allocation of project-specific funding to an IARC and, where appropriate, Challenge Programs of the CGIAR will be considered annually on a competitive basis, where projects are selected on the basis of:

- relevance to ACIAR's country priorities
- impact focus
- networking with the National Agricultural Research Systems in ACIAR partner countries and with Australian research agencies
- justification, scientific merit and consideration of equity amongst IARCs.

Project examples

Examples of some project outcomes associated with the international centres have been separately reported in some country programs. Work continues in **Afghanistan**, channelled through CIMMYT, while the program in Iraq is supported through **ICARDA**. These projects report considerable progress in spite of the civil unrest in both countries. **CIMMYT** and **ICARDA** are also partners in the project, described in the China country report but applicable to many countries, which is trying to ensure productivity and food security through **sustainable control of wheat yellow rust**.

Agricultural knowledge, science and technology (AKST) have played key roles in reducing poverty. An ACIAR project involving **The World Bank** and **IFPRI** is attempting to discern the best way of disseminating information to promote agricultural advances and how to improve the pathways to ensure those benefits reach the world's poor, with particular emphasis on India and China.

Bioversity International (formerly the International Plant Genetic Resources Institute) has joined forces with another ACIAR bilateral research team to do battle with two fungal diseases of banana—Fusarium wilt and blood disease. These diseases have already devastated the crops of smallholders in Indonesia and could well threaten the banana industry in neighbouring countries, including Australia.

A project involving **IRRI**, and described at length in the Philippines report, is gauging the impact of migration and/or off-farm employment on roles of women in Asia and Australia. It tells the familiar tale of how economic pressures are pushing members of farm households to seek off-farm work. The study is gathering information in the hope of bettering the situation of women who are usually left behind to look after the farm.

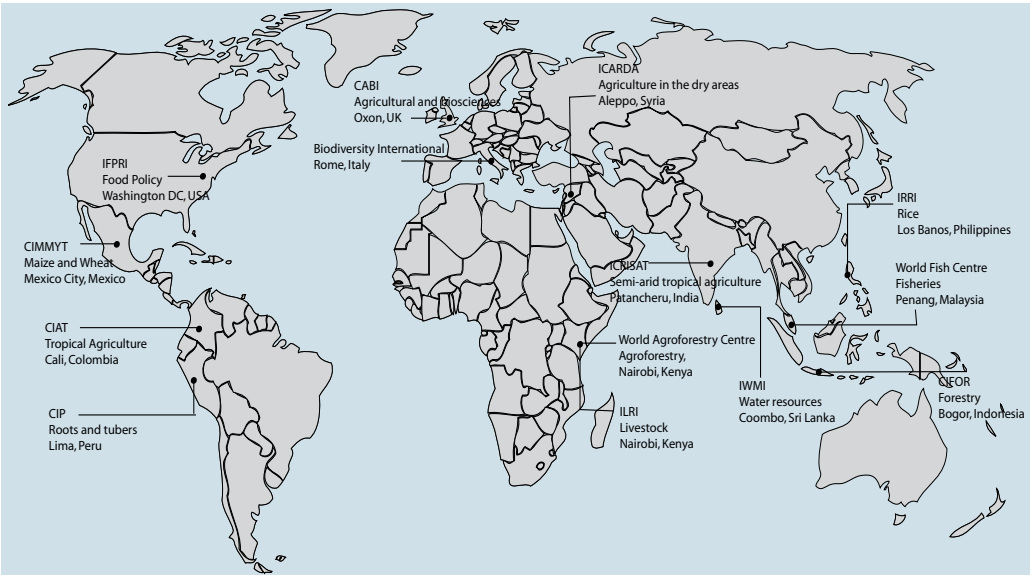
CABI is leading a program to combat the main pest to coffee in PNG—coffee green scale—which, on average, reduces high yield crops by 10%. This project is developing and fostering uptake of biological control over other integrated strategies for coffee green scale. More information about this project, which is studying the distribution, impacts, biology and control of coffee green scale in the coffee growing zones in PNG, can be found in the PNG report.

Rebuilding continues in those regions affected in December 2004 when the tsunami hit Indonesia. A project assisted by the **AVRDC** is seeking to restore farmland which, in many cases, was smothered under deposits of mud, salt, soils and debris. Once restored, vegetable and crop production can resume.

In Indonesia, larger scale teak plantation production is slowly in decline despite rising demand, and most production now comes from smallholders. **CIFOR** is helping smallholders find alternative sources of income as they wait until trees mature, and is also giving them knowledge about silvicultural techniques and marketing strategies.

In a project just commenced, ILRI and IFPRI are working with others to help Vietnam's smallholder pig producers. The project seeks better technology and policy options, and innovative forms of marketing that will improve the producers' access to higher value market chains and thus help to raise their incomes.

Location of international centres receiving core funding from ACIAR



ACIAR funding to international agricultural research centres in 2006–07

Acronym	Centre title and location	Core Funding	Project-specific funding	Total
Centres associated with CGIAR				
CIAT	International Center for Tropical Agriculture, Colombia	$250,000	$220,512	$470,512
CIFOR	Center for International Forestry Research, Indonesia	$250,000	$243,530	$493,530
CIMMYT	International Maize and Wheat Improvement Center, Mexico	$750,000	$533,010	$1,283,010
CIP	International Potato Center, Peru	$250,000	$425,983	$675,983
ICARDA	International Center for Agricultural Research in Dry Areas, Syria	$250,000	$489,013	$739,013
ICRAF	World Agroforestry Centre, Kenya	$250,000	$0	$250,000
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics, India	$500,000	$535,679	$1,035,679
IFPRI	International Food Policy Research Institute, USA	$500,000	$258,835	$758,835
ILRI	International Livestock Research Institute, Kenya	$250,000	$164,994	$414,994
BI	Bioversity International, Italy	$250,000	$99,259	$349,259
IRRI	International Rice Research Institute, Philippines	$750,000	$592,315	$1,342,315
IWMI	International Water Management Institute, Sri Lanka	$500,000	$258,352	$758,352
WORLDFISH	World Fish Center, Malaysia	$500,000	$319,863	$819,863
Centres not associated with CGIAR				
AVRDC	The World Vegetable Center, Taiwan	$0	$439,368	$439,368
CABI	CAB International, UK	$250,000	$144,548	$394,548
Total funds to IARCs		$5,500,000	$4,725,261	$10,225,261
Regional Support				
APAARI				$75,000
Crawford Lecture				$10,000
Total Multilateral funding				$10,310,261

Building research capacity

AOP budgeted expenditure in 2006–07	$3,560,000
Actual expenditure in 2006–07	$4,132,093
Expenditure in 2005–06	$2,856,008
Papua New Guinea	$2,565,098
Proportion of total ACIAR expenditure 2006–07	7.1%

Ms Sharon Harvey, Education and Training Officer

Through its training program ACIAR has a key priority to build the research capacity of agricultural research institutions in key partner countries by providing both discipline-specific and some broader training opportunities.

Key performance indicators	Performance 2006–07
Continued high quality of applicants for in-depth research management training in Australia	Forty-three applications for John Dillon Fellowships were received in 2006–07 and seven Fellows successfully complete the program in March–April 2007
At least two new cross-program training courses designed with new providers to meet identified demand from South-East Asia–Pacific countries	New courses in commercialisation and research business management and in pest resistance management for genetically modified crops were developed and delivered; courses in forestry research management and experimental data analysis were significantly revised.
Size of postgraduate (John Allwright Fellowship) program increased by at least 25%	In 2006–07, 61 new students were awarded postgraduate fellowships. There were eighty-nine students (65 active and 24 under contract to start) as at 30 June, 2007 compared with 44 active fellowships as of 30 June, 2006
Analysis of Australian and overseas (non–John Allwright Fellowship) students working on ACIAR projects shows that at least 50 successfully completed honours and postgraduate qualifications in association with ACIAR projects over the last four years	Over 100 non–John Allwright students completed honours and postgraduate study in association with ACIAR projects since 2003.

Project-specific training

ACIAR only supports training that relates directly to our projects. The training program focuses on specialised training activities provided through our postgraduate and research management fellowships and short courses targeting specific issues. Training opportunities arising as a component of ACIAR-funded projects are not included in the budget figures shown above. The majority of training provided by ACIAR takes place within individual research projects through 'on the job' training, where either developing country scientists visit Australia or Australian specialists visit partner countries to work together. At its inception, each ACIAR project is designed to include capacity-building, through formal and informal training to enable project personnel from partner countries to engage in the full range of

activities. Formal courses may be built into the project; for example, to provide training in a particular research methodology or to develop social science research skills and often to develop essential skills in computing or scientific communication. Informal training varies according to the type of project, the ability of the project team and opportunities that arise.

Achievements

Training managed and funded by the ACIAR training program falls into four categories, the first representing by far the largest main expenditure:

- postgraduate fellowships (John Allwright Fellowship Scheme)
- research management training (John Dillon Memorial Fellowship)
- short-term cross-discipline training courses for developing country staff involved ACIAR projects
- training courses provided through the Crawford Fund for International Agricultural Research for project staff on ACIAR-funded projects.

Capacity building is important for all of our developing country partners, but especially so for ACIAR's newer, poorer partner countries. There is a particular emphasis on providing training for ACIAR project scientists from PNG, the Pacific Islands, poorer parts of Indonesia, East Timor, Cambodia, Vietnam and Lao PDR. ACIAR's cross-program training courses are presented by both public and private sector providers.

Postgraduate fellowships

John Allwright Fellowships are awarded to developing country project scientists who are actively involved in an ACIAR project. These Fellowships are awarded for study at Australian universities to undertake Postgraduate Diploma, Masters or PhD training, with the student's research project forming a discrete topic related to, but not part of, the existing ACIAR project. ACIAR supports a limited number of coursework postgraduate degrees in situations where the partner institute requires development of a broader skill set rather than in-depth research training. While individual awardees benefit from the scheme, partner country institutions are the key targets. In 2007–08 fellowships will be available to ACIAR project scientists and economists who are citizens of PNG, the Pacific Island countries of Fiji, Samoa, Tonga, Solomon Islands and Vanuatu, East Timor, Indonesia, Vietnam, Cambodia, Lao PDR, Philippines, India, Bangladesh, Pakistan, western China and the Republic of South Africa.

In 2006–07, $2.68 million was expended on the John Allwright Fellowship Scheme with 96 active fellowships during the year, representing 18 countries. During this time 16 fellows successfully completed their studies and 52 new candidates from Bhutan, Cambodia, China, East Timor, Fiji, Indonesia, Lao PDR, PNG, Philippines, South Africa, Tonga, and Vietnam commenced at 15 universities in Australia. ACIAR, with co-investment from AusAID, has taken measures to increase the size of the John Allwright Fellowship Scheme with the aim of supporting and maintaining up to 90 active fellowships during 2007–08. Each year a group of new Fellows spends a week visiting ACIAR headquarters and participate in training in science communication, writing research papers and networking. In 2007–08 two meetings will be held to cater for the increased number of Fellows.

Returnee small project awards

Small grants of up to $10,000 are available for successful John Allwright Fellows, who have completed postgraduate studies and returned to relevant employment in their home country. The follow-on funding scheme provides for an activity which continues, or is related to, the research done within an ACIAR project associated with postgraduate work. These grants for former John Allwright Fellows are primarily aimed at developing small-scale research projects in the returnee's

institution, which may catalyse longer term support. In 2006–07 five small projects totalling $43,883 were awarded. Since 2000, a total of 40 of these awards have been made.

John Allwright Alumni Association

Former John Allwright Fellows, who have completed their studies in Australia, are an important part of the ACIAR network, and many play valuable roles after returning to their home countries in maintaining strong linkages between Australian and partner country institutions. Several former Fellows now lead or play key roles in ACIAR projects and, in recent years, many have received returnee small project grants. ACIAR has formalised its relationships with its former Fellows, through the establishment of a 'John Allwright Alumni Association'. In 2006–07 alumni have assisted as tutors in the delivery of a number of ACIAR-sponsored in-country training courses. Alumni receive an electronic newsletter three times annually and attend major ACIAR events held in partner countries. They also contribute to the quality of information and its analysis in the external impact assessments that are commissioned by ACIAR.

John Dillon Memorial Fellowships

John Dillon Fellowships provide an opportunity for agricultural scientists and economists from ACIAR partner countries to develop leadership skills in the area of agricultural research management, agricultural policy and/or extension technologies. This is achieved through exposure to Australian agriculture across a range of best practice organisations involved in research, extension and/or policy-making. ACIAR has awarded 26 Fellowships since the program's inception in 2002. During February/March 2007, seven John Dillon Fellows (from Indonesia, Lao PDR, PNG, Philippines, South Africa and Vietnam) visited for approximately 5 weeks. Minister Downer met with them at Parliament House and presented each Fellow with a plaque.

Recipients of the John Dillon Memorial Fellowship Award, 2007

Australian Youth Ambassadors for Development

ACIAR continues to provide assignments for the AusAID-funded Australian Youth Ambassadors for Development program (AYAD), where young Australians spend a period of between 3 and 12 months assisting on a development activity in a partner country. Since 2000 there have been 40 Youth Ambassadors who have successfully completed assignments on ACIAR projects. During 2006–07 four new Youth Ambassadors left Australia to gain international experience working on ACIAR projects in developing countries. One is currently based in Bangladesh working as a volunteer entomologist; a second is working on the ACIAR support for market driven adaptive research program in Indonesia; and two others are on assignments in the Philippines: one is helping to advance the understanding of ecosystem processes of tree farms owned by small land holders and the other is working with the Philippines Landcare network to assist in developing a monitoring and evaluation system for their training activities.

ATSE Crawford Fund fellowships, training courses and master classes

In 2006–07, total funding through ACIAR was $847,330 including management of an Australian Government allocation of $690,000, as well as $157,330 funding from ACIAR for joint training activities. The ATSE Crawford Fund also attracted contributions from state governments and the private sector. In 2006–07 the Crawford Fund conducted several short-term training activities associated with ACIAR projects, including Master Classes in Aquaculture Nutrition, Aquaculture and Poultry Feed Manufacturing and Landcare. Other training courses associated with ACIAR projects included:

- Training on computer simulation of in-store drying of grain in China July 2006 (The University of New South Wales)
- Collaborative curriculum developments in land and natural resource management in eastern Indonesia November 2006 (Charles Darwin University)
- Success with Lucerne in China March 2007 (South Australian Research and Development Institute)
- Scientific Writing Workshop for Cambodian Agricultural Scientists April 2007 (NSW Department of Primary Industries)
- Laboratory analysis of soil and plant material May 2007 (The University of Queensland);
- Qualitative methods and systems modelling in tropical forestry June 2007 (The University of Queensland).

These activities also helped ensure ACIAR research results were more widely applied in developing countries since, in some cases, they gave ACIAR project leaders the opportunity to instruct scientists from countries other than those where their projects are situated. The Crawford Fund also sponsors short-term training fellowships. In 2006–07 the Fund sponsored seven fellowships to enable members of ACIAR project teams to undertake training activities in Australia of up to 3 months.

Cross-program training

In 2005–06 ACIAR, in consultation with its partners, moved to a more focused and integrated program of activities for staff associated with active ACIAR projects rather than running short courses in isolation. Themes from 'assisting in the development of a modern agricultural R&D system' (Lao PDR and Cambodia), 'linking research to farmer application' (Indonesia and the Philippines), to 'participating in the international scientific community' (Vietnam) were continued in 2006–07. ACIAR will continue to give special priority during 2007–08 to the Mekong countries (Vietnam, Lao PDR, Cambodia), Indonesia, Philippines, East Timor and PNG.

In addition to the cross program training activities, a training course in research management for 18 Indonesian agricultural research and development managers involved in the ACIAR Smallholder Agribusiness Development Initiative (Support for Market-Driven Adaptive Research) program was held in Australia in June 2007. The broad themes the managers were exposed to covered organisational change, planning, monitoring and evaluation, collaboration between institutes and farmer input to research priority setting, and funding. The 2-week training course included site visits to best practice research management models and a formal management course at Mt Eliza Business School.

Cross-program training courses (4–21 days in duration) undertaken in 2006–07 included:

- *Application of Participatory Research and Extension*
  In August 2006 ACIAR sponsored the attendance of six project scientists from India, Vietnam, Philippines, Lao PDR and Cambodia on this 12-day course held at IRRI, Los Baños, Philippines. Its main objective was to enhance participants' knowledge and skills in the effective application of participatory research and extension for accelerating the adoption of appropriate and improved rice and rice-based technologies.
- *Gender Mainstreaming in Agricultural Research for Development*
  ACIAR sponsored six participants (three women and three men) from PNG, Vietnam, Indonesia and Pakistan on this training course delivered by the International Institute of Rural Reconstruction (IIRR), Silang, Cavite, Philippines from 14–25 August 2006. The course examined various efforts in gender mainstreaming at both the program/project and organisation levels and introduced a process on how gender can be mainstreamed within development organisations.
- *Research & Development Project Management and Commercialisation*
  During 9–13 October 2006, 25 Philippine project scientists attended a 5-day training course in Manila on defining research projects and deliverables. The 5-day University of Melbourne course included topics on: working effectively with research project teams; effective collaborative research skills; maintaining research projects' commercialisation potential; and determining pathways to commercialisation for research projects. A second course for a further 25 Philippine project scientists was held in June 2007.
- *Writing scientific papers in English*
  Following the success of this training course on scientific communication first delivered in Vietnam in January 2006, a two-session workshop was conducted for 19 Indonesian scientists during September and November in Jakarta, Indonesia and again in Jakarta from 15–20 January 2007 and 11–16 February 2007 for a further 16 participants. The course aimed at having each participant complete a substantive document ready for publication in an international journal on completion of the course.
- *Genetically Modified Crops – Pest Resistance Management and Monitoring*
  From 5–24 November 2006, ACIAR sponsored the participation of four female Vietnamese scientists in hands-on involvement with the Australian cotton insect resistance monitoring and research program during the Australian cotton season in Narrabri, NSW. The course was intended to provide direct exposure to the techniques and approaches employed in Australia to run a successful resistance management program. A second session of this course was held in Vietnam in June/July 2007.
- *Leadership Course for Asian Women in Agriculture R&D and Extension*
  Following positive feedback from participants who attended this leadership training in November 2005, ACIAR sponsored a further five women from PNG, Indonesia, Solomon Islands and Vietnam to attend this course that took place at IRRI, Los Baños, Philippines, from 27 November to 8 December 2006. The course concentrated on developing work-related and personal leadership skills, and developing work plans integrating gender concerns into the R&D environment.
- *Experimental design, data analysis and interpretation*
  The second and third in a series of courses on data management and analysis conducted by the University of Queensland was held in Lao PDR from 11–16 December 2006 and in Cambodia from 5–10 February 2007. The Lao PDR course, attended by 22 ACIAR project scientists (18 men and 4 women)

from ACIAR projects was well received by participants, although language differences were, at times, a challenge. In Cambodia, the course was held at the Cambodia Agricultural R&D Institute headquarters for 21 attendees, with a similar gender balance. A fourth six-day training workshop took place in Indonesia in late June 2007.

- *Financial and economic research methods for natural resource managers*
  The course conducted by the University of Queensland, took place in Manila, Philippines, from 9–13 January 2007. The group included 18 participants, including from Indonesia (5), India (2), Philippines (9), Thailand (1) and Vietnam (1). This course aimed to provide managers with an understanding of 'tools' available for understanding the socioeconomic factors that contribute to successful management of natural resources. The primary focus was on financial and economic research methods.
- *Research Management for Foresters*
  A research management workshop for the Indonesian Forestry Research and Development Agency (FORDA) was held in Indonesia during May 2007. Participants were Directors of FORDA research institutes and other senior staff. The workshop covered linkage of research into national policy and bridging research results into practice as a means of increasing impact.
- *Social and Community Dimensions of ACIAR projects*
  This short course was held in PNG in April 2007, and again in Indonesia during July 2007. The goal of the training workshop was to increase participants' understanding, knowledge and skills to critically analyse the social and community dimensions of rural development, and enhance the social outcomes from ACIAR projects.

Communicating research

AOP budgeted expenditure in 2006–07	$680,000
Actual expenditure in 2006–07	$657,485
Expenditure in 2005–06	$689,749
Expenditure in 2004–05	$776,556
Proportion of total ACIAR expenditure 2006–07	1.1%

Ms Liz Clarke, Manager, Communications and Secretariat Unit

Key performance indicators	Performance 2006–07
Information on project achievements and impacts is widely available in print and web-based media	• Project milestone reporting and summaries were posted on the website; achievements and impacts were captured in a suite of impact assessment publications, adoption studies and the country profiles. • *Partners in Research for Development* magazine and bi-lingual in-country newsletters continued to provide information on ACIAR's research. • Research outcomes were also communicated through a range of briefings, events and activities, media releases, television and radio coverage.
Evidence of continuing demand for and appreciation of ACIAR's scientific and corporate publications	• 13,747 copies of ACIAR publications were disseminated in hard copy format, with 421 copies sold upon request, earning a net income of $13,771. • A total of 277,403 separate visitors viewed ACIAR's website, with more than 7,415,000 hits recorded. • Website traffic has grown by 38%. Publications lists featured each month in the top 10 pages visited. Twenty five percent of visitors downloaded publications.
Targeted stakeholder groups are satisfied that their information needs are being effectively met	• In response to recommendations from ACIAR's Survey of Stakeholders, conducted in early 2006, ACIAR has improved information dissemination to partners, including holding annual meetings with stakeholders, provision for senior executives from research providers to meet with the ACIAR Board of Management and development of joint publications with partner organisations.
ACIAR's use of information and communication technologies for disseminating agricultural research information for development is consistent with current best practice	• ACIAR's information-rich website provides the first port of call for information about ACIAR. • ACIAR provides electronic versions of its scientific and corporate publications, free of charge on its website. • The website is undergoing a process of continuous improvement and new technologies are monitored and explored.

Position

ACIAR has a statutory obligation to communicate the results of the research it funds. With a wide range of stakeholders, the Communications Program targets specific audiences through the ACIAR website, printed and electronic publications, and other communication activities that raise awareness of the Centre's activities and outcomes.

ACIAR's scientific publishing program provides an avenue for project participants to communicate and disseminate results of their research to next user groups by providing low-cost access to a range of publications; from 'how-to' manuals to workshop proceedings, technical reports, monographs and a suite of corporate publications.

The Communications Program uses ACIAR's website as the primary source of information on project activities and outcomes, dissemination of free publications and an associated on-line shopping facility, with material also provided in hard copy and on CD-ROM. Translations into regional languages and use of multimedia technology are also supported.

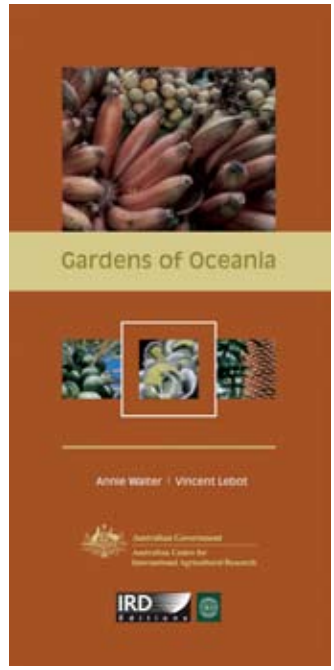
Other activities include raising public awareness of ACIAR's work through a range of briefings, events and activities, media releases, television and radio coverage, targeting specific audiences and communicating research outcomes, and the provision of materials at major scientific conferences and events.

Achievements

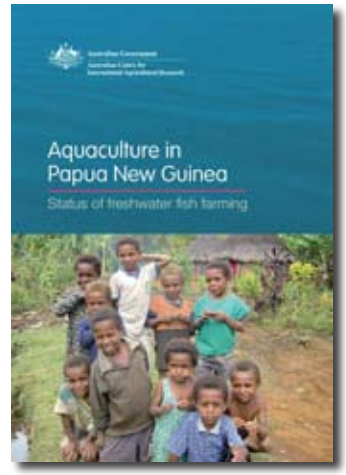
In the 2006–07 year, ACIAR published and distributed 14 new titles in its scientific series (six monographs, three proceedings, two working papers and three technical reports), and eight reports in its impact assessment series. These are listed in Appendix 4, together with the corporate and research awareness titles produced during the year.

More than 13,000 hard copies of publications were distributed, of which 421 were sold to developed-world customers, earning a net income of $13,771. Complimentary copies are distributed on request to people and institutions involved in agricultural research, development and extension in ACIAR's partner countries. Current ACIAR publications are available as downloads from the website, and these are also frequently accessed.

The most popular hard copy titles included *Gardens of Oceania* (Monograph 122), *Aquaculture in Papua New Guinea: status*



of freshwater fish farming (Monograph 125); and Economically Important Sharks and Rays of Indonesia (Monograph 124), written in both English and Indonesian, which is the first of its kind to provide identifications of the sharks and rays marketed in Indonesia, many of which are being over-fished. The guide should help in the identification of many of those species.



Coconut revival: new possibilities for the 'tree of life' (Proceedings 125) reports on a workshop on the palm, one of the most important crops grown in the humid tropics, with more than 11 million farmers, mostly smallholders with low income, growing the palm in 90 countries.

Agricultural Water Management in China (Proceedings 123) *and Towards improving profitability of teak in integrated smallholder farming systems in northern Lao PDR* (Technical Report 64) were also popular titles. A Publication Catalogue was produced in 2006–07 profiling ACIAR publications in a ready-reference format.

Agricultural development and land policy in Vietnam (Monograph 123a, published in Vietnamese) and *Agricultural development and land policy in Vietnam: policy briefs* (Monograph 26, published in both English and Vietnamese), focused on the impacts of the Vietnamese Government's new policies on agriculture and the provision of economic models suitable for analysing policy reforms.

The proceedings of a workshop held in Yogyakarta, Indonesia, *Heart rot and root rot in tropical Acacia plantations* (Proceedings 124), was published to support the cultivation of fast-growing hardwood acacias. Acacias are increasingly important to the economies of many countries around the Pacific Rim, including Australia, Indonesia and the Philippines.

Adoption of ACIAR project outputs: studies of projects completed in 2002–2003 examined the extension and adoption of research outcomes from a series of projects that ended four years earlier.

The flagship ACIAR magazine *Partners in Research for Development* continued to attract favourable attention from Australian and overseas recipients. The magazine profiled ACIAR research on animal health, biosecurity and the farm-to-market supply chain, along with

project activities in the Mekong countries. Other features included continuing the work of helping rebuild research capacity in tsunami-devastated areas of Aceh, Indonesia, and profiles of key stakeholders in partner countries.

A third series of the *Country Profiles* was produced in 2006–07. Each Profile comprised a current overview of ACIAR's program with summaries of active and recently concluded projects for each of ACIAR's partner countries or regions.

The Communications Program supported a range of briefings, events and activities, media releases, television and radio coverage, that targeted specific audiences and communicated research outcomes. A highlight was a media event to promote two projects in Vietnam. This event included joint sponsorship by ACIAR and the Crawford Fund of an Australian journalist to visit and report on projects in Vietnam. Other activities were undertaken in East Timor, Indonesia, China, the Philippines, Pakistan, and India. ACIAR projects received significant coverage in all partner countries via media stories, partner organisation newsletters and other activities.

The development and delivery of bilingual country-specific newsletters, together with other ongoing activities kept Australian embassy staff and international partners up-to-date with ACIAR projects, achievements and activities. ACIAR also maintained a presence at several conferences, such as the Australian Agricultural and Resource Economics Society Conference and the Annual Crawford Fund Seminar.

Developing capacity in scientific and general communications for partner-country scientists was undertaken through support for various ACIAR training and education programs. Information and support were also provided to program areas and country offices.

ACIAR's website

The information-rich ACIAR website (www.aciar.gov.au) is the first port of call for people wanting to find information about the Centre and its work. Accessibility is a key design feature, allowing users in Australia and developing countries to find timely and up-to-date information, including electronic publications, which are available for free download.

The site features detailed project information, with a growing number of concluded projects and their impacts reported on, as well as details of all active projects, including progress reports. Australian and

international research partner information and project involvement is included, together with detailed reporting and planning documentation on ACIAR priorities and outcomes.

Information from throughout the lifecycle of a project is included, from activation to final reporting stages. Searching options allow projects to be grouped by country, by program discipline and Australian or multilateral partner organisations.

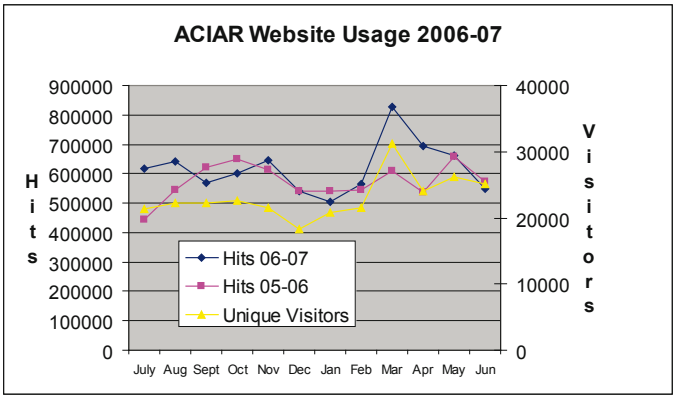
Website traffic continued to rise against that recorded during the 2005–06 financial year. Website statistics for the 2006–07 year demonstrated that visits, hits and usage all continued to trend upwards. More than 7 million page hits were recorded by more than 270,000 unique or separate visitors, which is an increase in site traffic of 38%.

ACIAR's online bookshop, which allows visitors to search for titles, freely download electronic publications and purchase hard copy publications, remained one of the most popular destinations on the site. Publication lists allowing visitors to access publications by their type (monographs, technical reports etc) or subject matter (animal health, forestry etc) featured in the top ten most visited pages each month. A quarter of visitors downloaded ACIAR publications.

The chart shows the number of unique visitors to the site along the right-hand axis and the number of hits on the left-hand axis.

A number of site enhancements were made through the year, including installation of a new content management system and redevelopment of the 'For researchers' information. The website is undergoing a process of continuous improvement, and new technologies are monitored and explored.

Trends in visitor use of the ACIAR website—www.aciar.gov.au



Measuring research impacts

Dr Jeff Davis, Policy Linkages and Impact Assessment

AOP budgeted expenditure in 2006–07	$450,000
Actual expenditure in 2006–07	$358,544
Expenditure in 2005–06	$709,307
Expenditure in 2004–05	$408,624
Proportion of total ACIAR expenditure 2006–07	0.6%

** Lower than previous years due to a tighter ACIAR budget position in 2006–07.*

Key Performance Indicators	Performance 2006–07
Six assessments of completed projects will be commissioned and published in 2006–07	Seven projects or sets of projects were assessed with six assessments published.
Adoption studies of projects concluded in 2002–03 will be commissioned	Adoption studies were undertaken for seven projects completed in 2002–03 and a report published.
Clarification and estimation of the outcomes of new projects will be enhanced by assisting project proponents during the peer-review process of their proposals	Input was made to a range of project development activities. Examples include horticulture project development in Pakistan, rice and wheat cultivation in India, chalky rice at IRRI and fisheries projects in Vietnam.
Increase capacity of ACIAR staff and Australian and developing country researchers in conceptual and practical aspects of estimating research-induced poverty reduction	Input was made during project development and review meetings.
Develop closer links with partner country impact assessment groups and CG Centres	Partner country collaborative groups were established in the Philippines and Vietnam. Links with impact assessment groups at all CG Centres were established through SPIA and collaborative activities started with ICRISAT, CIFOR and ILRI.
Review past ACIAR bilateral projects for potential impacts to provide systematic basis for future impact studies	This was partly achieved with a database developed to systematically collect rapid impact assessment information. This will be continued in 2007–08 to give an expanded set, which will be used for future sampling.
Assess the capacity building impacts and synergies between ACIAR and ICRISAT projects	A case study for sorghum breeding was published in our Impact Assessment Series (IAS).

Key Performance Indicators	Performance 2006–07
Review ACIAR's China investments and potential areas for future mutual collaboration	A full review was not undertaken but a detailed review of eucalypt development in China was substituted and published as an IAS Report. Also, three China linkage projects were funded.
Review methodology used by ACIAR assessment activities and link to the activities of the Office of Development Effectiveness	Draft Guidelines for impact assessment practitioners were finalised. They will be used as a reference for the next 12 months, and then developed into a final published document.

Position

The impact assessment (IA) activities of ACIAR are part of the Policy Linkage and Impact Assessment Program (PLIA). The purpose of this IA activity is to provide an important 'after the event' dimension to the comprehensive monitoring and evaluation (M&E) processes ACIAR has in place. These M&E processes are used to ensure that ACIAR's funds are used to support priority issues and are undertaken so that objectives are achieved and effective impacts result.

The IA functions include an important accountability role in providing key stakeholders with a clear measure of the returns on the funds ACIAR invests. ACIAR continues to expand the measures of these returns to include quantification of all 'economic' impacts, that is, financial, environmental, social and capacity building/stock of knowledge. In addition, the assessments are increasingly providing a basis for improving the research selection process by identifying lessons learnt from past activities and feeding them into the project development and selection process.

Emphasis is also placed on developing collaborative links with partner country, Australian and international groups undertaking similar activities to enhance ACIAR's effectiveness in this area. These collaborative links help improve the accuracy of the information used in assessing the impacts of the research and also the effectiveness of the methodology used to quantify the returns on investment.

In all, seven projects or sets of projects were formally assessed this year. The impacts of these projects are summarised in the following table. The results continue to show that the research ACIAR supports achieves significant returns on the funds invested.

For the first time this year four of the seven assessments were chosen using a stratified random sampling process. This is the first time in ACIAR, and we believe probably anywhere, that projects for formal impact assessment have been chosen in this way. The sample was chosen as part of the Australian benefits study last year. Based on the original proposals, projects were stratified into those expected to have Australian benefits and those not. This year the benefits to all partner countries were assessed for this same random sample.

The results, which are shown in the table, provide an interesting snapshot. Clearly caution is required in drawing conclusions due to the very small sample size (four out of well over 1,000 projects). As might be expected the four research efforts display a wide spread in returns on the investments. One project on sorghum breeding has very high returns, nearly $200 million; one on trade access for mangoes has medium returns with $20.8 million; one on trees on salt-affected land has low returns with $2.4 million; and the

Project(s) Description	Chosen via a random sample	Net present value of benefits ($ million)	Benefit/ cost ratio	Internal rate of return (%)
Improved Australian trees species in Vietnam	No	132.4	82.6	32.2
Mite pests of honeybees	No	68.4	17.2	27
Minimising the impact of fungal diseases of eucalypts in South-East Asia	No	65.2	29.5	23
Sorghum breeding and capacity building	Yes	199.5	100.7	28
Improved trade in mangoes in Thailand, the Philippines and Australia	Yes	20.8	4.8	26.7
Tree growing on salt-affected land	Yes	2.4	1.12	5.7
Flowering behaviour of mangoes	Yes	-5.3	0	0

last, flowering of mangoes, has had no final impact yet. Given the inherently risky nature of research this is an interesting result. Taken together as a research portfolio this group has a very high return on the funds invested. Even the project with no measurable impacts yet has contributed to the stock of knowledge on an important industry problem and further research funded by others could still solve this difficult problem. If it does, some of the benefits would be attributable to the ACIAR project.

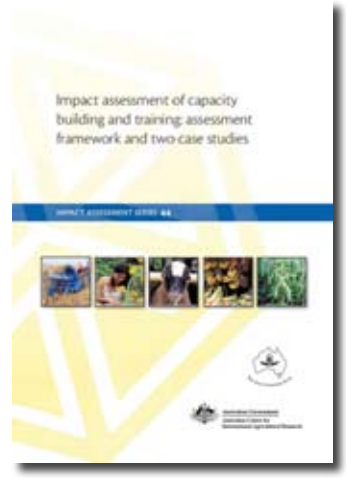
The other three projects were chosen because they fitted other objectives and were felt to have had significant impacts. As is shown, all were found to have very high returns of the funds invested. The two forestry research activities in Vietnam were chosen to facilitate training for partner groups in Vietnam. The mites in bees research activity was chosen because it was an interesting set of projects with a mix of complex benefits which require more complicated methods to analyse the impacts.

During this year a major effort was also focused on including the complex area on quantifying the benefits from capacity building in impact assessment studies. Most research has an element of enhancing the capacity of the participating scientists to undertake future research and therefore deliver future impacts. They also usually add to the stock of knowledge which can be crucial for achieving future impacts. However, by its nature, ACIAR's collaborative partnership mode of operation usually makes a significant contribution in this area.

Few have tried to quantify the benefits from this aspect of research activities because it is a complex area. This has meant that the returns to some activities may have been underestimated. ACIAR commissioned a major study to review this area and develop effective methodology for quantifying these benefits. This has been applied to three case studies. The results have confirmed prior expectations. The potential returns to capacity building can be an important part of collaborative research partnerships such as those supported by ACIAR. The studies show that, although often complex, when values are placed on these impacts, the returns can be substantial. Often these returns have not been included in studies of the direct impacts. Estimates for the three case studies ranged from NPV of $82,000 (B:C ratio of 13:1) to nearly $200 million (B:C ratio of 100:1).

Achievements

Impact assessment of capacity building and training: assessment framework and two case studies



Capacity building and training are important aspects of most ACIAR-funded collaborative partnership projects. Until now impact assessment studies have not tried to quantify the benefits to this aspect of research activities. ACIAR, in collaboration with the ATSE Crawford Fund, supported this study to review the literature and applications on this issue and develop a suggested framework for quantifying the returns to this type of benefit. The report provides a comprehensive review of the issues and relationships associated with capacity building and additions to the stock of scientific knowledge. It then develops a framework for quantifying impacts. This framework is applied to two quite different case studies. These demonstrate that, even though it is complex and difficult, it is possible to estimate and attribute benefits to capacity building. It also shows that these returns can be significant. In the case of pigeon pea breeding in India it was found that the NPV of the capacity building aspects of the research was $67.6 million with a benefit–cost ratio of 28:1 and an IRR of 23%. This was about half of the total benefits to the research activity. On the other hand, for a smaller, yet important, water management research activity in Vietnam, the capacity-building contribution was valued at $82,800 with a benefit coast ratio of 13:1 and IRR of 28%. In this case, though, the benefits to the capacity building component were only about 0.5% of the total benefits to the research. The results were published as Impact Assessment Series Report No 44.

Development of sustainable forestry plantations in China: a review

In China the forestry sector is a major contributor to economic growth. The development of fast-growing high-yielding plantations for wood production has made a significant contribution to this sector, especially over the past 20–30 years. Eucalypts species have played an important role in this development and ACIAR has supported a significant research activity in this area for some time. Past impact assessment studies have shown that the returns on this investment have been extremely high. However, to achieve the development success that has been achieved takes more than just the research activities which have identified substantial potential productivity gains. This report assembles the full story on the development and expansion of eucalypts in China and highlights the importance of collaboration and coordination of a wide range of efforts by many organisations to achieve this growth. It highlights the complexities of this process and therefore the difficulties of attributing the

substantial gains to the community in China from this success. The results were published as Impact Assessment Series Report No 45.

Mite pests of honey bees in the Asia-Pacific region

Mite pests are one of the major production constraints facing the apiary industry throughout the world. In most countries the mites are present and have a significant impact on productivity and production costs. In Australia, the only country in the world without these mites, quarantine strategies are a major issue. ACIAR has funded research on these important pests for about 15 years. The outcomes of this research have made a significant contribution internationally to a better understanding of the mites, especially varroa, and their host conditions. The outcomes of the research are a good example of the mutual benefit nature of ACIAR's collaborative research model. Research on a major pest for ACIAR partner countries which is also a major threat to Australia can result in a significant breakthrough, which was not as likely if the research was done in isolation in each country. The entomological expertise from Australia, working in partnership with local experts in different environments where pests are prevalent, provided a major breakthrough in understanding. This then resulted in the development of some simple control measures for smallholder beekeepers and, also, some important new strategies to improve significantly quarantine procedures. The scientific contribution of this work has also been significant. One of the papers from this work is the third most cited paper of all papers produced by CSIRO. This impact assessment study highlights the significant benefits which can be gained for both Australia and partner countries from collaborative research. In this case, due to the significance of the threat and relative size of the industry, the benefits to Australia are very large. On the other hand the benefits in the partner countries accrue to the poorer smallholder sector. The NPV of the benefits to all countries were $99.9 million with a benefit–cost ratio of 25:1 and an IRR of 30%. The results were published as Impact Assessment Series Report No 46.

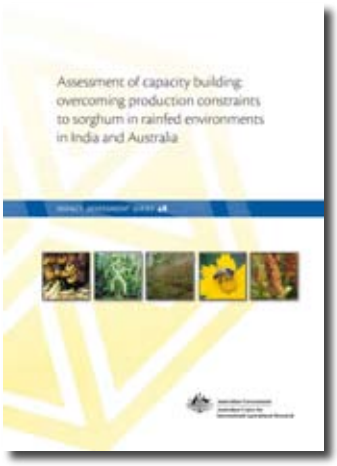
Improved Australian tree species for Vietnam

Australian tree species are being used extensively throughout the world because of their fast growth rates and adaptability to many (harsh) environments. While there is often some controversy regarding extensive use of these 'exotic' species, there are many cases where they have resulted in substantial growth for developing countries and effective replacements for degradation of native forests. ACIAR, from its earliest days, has had a regular set of projects which have undertaken a

substantial amount of research into these tree species in many areas. One important area has been to support the assembly of information about the wide range of species and especially the diversity of material within even these groups. Even where a particular species has been grown for some time the wide range of genetic material that is available within even individual sub-species, can lead to substantial improvements in productivity and product quality. This study looks at the impact on Vietnam of some of these research activities. It shows that, through adaptation, significant improvements in productivity can be achieved through selection of provinces which are best suited to different environments. This was especially the case for this research when this selection was combined with the introduction of improved methods of establishing seed production areas, seedling seed orchards and clonal seed orchards; very high levels of adoption were found. This has been assisted by the government introducing new regulations requiring nurseries to be licensed and seed sources to be certified. The returns on the research investment are shown to be very high, with estimates of the net present value of benefits of around $130 million, a benefit–cost ratio of 83:1 and an IRR of 32%. This is consistent with similar impacts in other countries for this area of forestry research. The results were published as Impact Assessment Series Report No 47.

Assessment of capacity building: overcoming production constraints to sorghum in rainfed environments in India and Australia

ACIAR has continued to focus some of its impact assessment studies on this capacity-building aspect of research outcomes. The study reported here is part of this emphasis. In addition, ACIAR has started to use random samples of projects as the basis for selecting the impact studies it undertakes. It started this process last year with its study of the benefits to Australia from ACIAR-funded research. Then it chose five research activities for assessment in that study. This year, impacts of all benefits, not just to Australia, from this same random sample of projects were assessed. This study is particularly interesting. A preliminary assessment of the project review documents suggested that the project did not achieve any of the originally intended impacts. However, more detailed impact assessment investigation revealed that the project uncovered some new sorghum plant material which was of considerable benefit to Australia. This has subsequently led to a variety being developed through other Australian funding. Furthermore, it was found that although no new varieties were developed in India from the original work, the project did enhance the capacity of the Indian collaborators in some new areas of research techniques. This enhanced



capacity facilitated successful application for funding from other sources. The subsequent research activity has led to new varieties which are about to be released. The study concludes, through interviews with various people within the research system, that it is appropriate to attribute a small share of this impact to the capacity-building activities of the original ACIAR-funded project. The total returns which were attributed to both indirect effects are found to be significant with and net present value of benefits of around $199 million and a benefit–cost ratio of 100:1. The study illustrates two interesting points. First, a random sample can identify impacts of projects which were otherwise not expected. In this case a project was chosen which it was not felt had had any impact. Second, the capacity-building part of at least some projects can provide substantial returns to the invested funds. The results were published as Impact Assessment Series Report No 48.

Minimising the impacts of fungal disease of eucalypts in South-East Asia

A range of eucalyptus species are grown in large areas throughout the world. This has been happening for over 100 years. However, in the last 30–40 years the area grown in plantations and in smallholder lots has increased substantially. Because of Australia's knowledge and expertise in many areas of research on these species, ACIAR has always funded a range of projects in this important area. Part of the reason for the popularity of these trees has been a relative lack of pests and diseases when they are introduced into new environments. With these substantial increases in areas and numbers will always come an increased risk that pests and especially diseases will be introduced or local pathogens will adapt to attack the trees. In the 1980s there was a severe leaf blight epidemic in south-east and central Vietnam which severely reduced growth rates and deformed crowns and main stems of trees. This threatened the future of eucalypts. Less severe symptoms were also observed later in Thailand and north Queensland. The project assessed in this study: increased the knowledge of the disease; developed effective screening methods for selecting resistant trees; developed management strategies based on resistant species, provenances or clones; and established within-country expertise in all areas. It focused on Vietnam and Thailand. The study found that, because of the project, there is now genetic material with enhanced disease resistance available to growers in all countries. There is also capacity to manage a disease outbreak in both Vietnam and Thailand. High-risk regions were identified through climatic modelling, so surveillance is now more effective. In addition, information of the importance of disease management has been provided to growers, especially for the plantation sector.

Adoption has been substantial through certification of the new plant material in Vietnam and collaboration with private plantations in Thailand. The impact assessment analysis shows that the return on investment has been very high with a net present value of benefits of over $65 million, a benefit–cost ratio of 30:1 and an IRR of 23%. The results were published as Impact Assessment Series Report No 49.

Improved trade in mangoes from the Philippines, Thailand and Australia

During 2006–07, ACIAR used a small random sampling approach to choose four projects for the majority of its impact assessment studies. This report provides the results of the impact assessment for two of these sampled projects. Both projects related to the mango industry in the Philippines, Thailand and Australia. However, one looked at an issue related to on-farm production by developing a better understanding of flowering to even out production cycles. The other considered technologies to facilitate trade by developing new methods of treating fruit to meet quarantine requirements in export markets. The results of the impact assessment studies were mixed. One project activity has generated some significant impacts and the returns to the research were found to be high. The other did not generate any direct impacts for farmers. These results raised some interesting issues. The mango flowering project chose an area which is a major issue for farmers and the industry in all countries. Like many perennial tree crops, mango yields vary on a biannual basis. In other industries, with similar production characteristics, research has resulted in management strategies which have enabled farmers to effectively even out production. This is, however, a relatively complex area, so undertaking the first set of research is high risk and it may take several sets of research to fully understand the crop behaviour and develop practical solutions. On the other hand, disinfestation of fruit to satisfy quarantine requirements has been common practice for many years. In this case the banning of previously used chemicals to satisfy quarantine requirements generated the need for new technologies. There were some ideas available and even a significant set of other research being undertaken or results were already available. This area was lower risk and, indeed, one of the important impact assessment issues was how to attribute the benefits from increased trade to ACIAR as opposed to the other activities. The return on investment estimates reflected the above outcomes. The mango flowering project was found to have no measurable benefits. Although the research groups indicated that subsequent research, funded by other organisations, is still investigating this area, the start made by the ACIAR project could be a critical link to

achieving a final solution. For the disinfestation research, the returns of investment were found to be significant. The NPV of benefits was $20.8 million with a benefit–cost ratio of 5:1 and an IRR of 27%. This study has generated some interesting issues which will be factored into future decisions regarding funding research in this type of area. The results were published as Impact Assessment Series Report No 50.

Growing trees on salt-affected land

Salinity and water logging are significant problems in a wide range of agricultural areas throughout the world. Australia, Pakistan and Thailand are disproportionately affected by salinity. In Pakistan, especially, significant areas of agriculture have been or are close to being abandoned due to salinity. Hydrological and chemical methods of land reclamation can be effective but are usually found to be very expensive and not financially feasible. Bio-agriculture has often been suggested as a potentially lower cost option. It has been found that there are a range of Australian tree species such as eucalypts and acacias which are adapted to not just surviving, but thriving in these types of environments. In addition, some Australian scientists have a relative international advantage in this type of research. ACIAR has funded a series of research activities in this area. This project was selected for impact assessment this year as part of a small random sampling process. It was not chosen because it was an obviously successful, high rate-of-return project. This impact assessment study found that although the research clearly demonstrated that growing short rotation trees can result in reclamation of abandoned land, the adoption of the outcomes has not been high. To date 7,000 ha in Pakistan and 5,000 ha in Thailand have been treated. This adoption was directly tied to development assistance provided by aid donors or the partner-country governments. There was little privately-funded farmer adoption identified. The gross welfare gains from adoption of the strategies developed were found to be high a present value (PV) of around $300 million for the study areas. However, the development costs and relatively long investment periods before receiving a return mean that the net gains are low. The overall results of the impact assessment study show that the return on the research investment was positive but relatively low. The NPV of research benefits was $2.4 million with a benefit–cost ratio of 1.12:1 and an IRR of 5.7%. This is significantly lower than many other areas of technology-oriented research activities. It is not uncommon to find that environmental research does not have high rates of return and it is often due to the long lags in achieving impacts. The results were published as Impact Assessment Series Report No 51.

Corporate governance

ACIAR outgoing Board of Management 2006–07—Director Mr Peter Core, Dr John Williams, Ms Joanna Hewitt, Chair Dr Meryl Williams, Mr Peter Corish

ACIAR's new governance framework

During 2006–07 the Australian Government assessed the current governance arrangements of the Australian Centre for International Agricultural Research (ACIAR) against the principles and recommendations of the *Review of Corporate Governance of Statutory Authorities and Office Holders* undertaken by Mr John Uhrig, AC, together with a range of other statutory authorities in the Foreign Affairs and Trade portfolio. The review was undertaken to achieve the most effective accountability and governance structures across the whole of Government.

In June 2007 the *Australian Centre for International Agricultural Research Amendment Act 2007* received Royal Assent. With effect from 1 July 2007 the amending legislation provides for a number of changes to the governance arrangements of ACIAR. The amending legislation implements the Government's response to the Uhrig Review.
The principal purpose of the amendments is to change the governance arrangements of ACIAR from a Board of Management to an executive management structure involving a Chief Executive Officer (CEO) and a seven-member Commission.

Other key amendments contained in the amending legislation provide for:

- responsibility for the administrative and financial management of ACIAR to be changed from the Board of Management to the CEO reporting directly to the Minister. This is in line with provisions of the *Financial Management and Accountability Act 1997*
- the revocation of ACIAR's body corporate status
- the establishment of a Commission comprising a Chair and six other Commissioners (including the CEO who may also be the Chair) to provide collective decision-making and expert advice to the Minister in relation to program formulation, priority setting, and funding and other matters as requested under the legislation by the Minister
- the appointment of Commissioners to hold office on a part-time basis for periods of up to 3 years
- the provision of Ministerial directions to the CEO concerning the performance of his/her functions under the legislation, including the strategic direction of ACIAR
- the retention of the current Policy Advisory Council (PAC), which includes key overseas stakeholders, but with no duplication of membership with the Commission.

These changes are consistent with the executive management template recommended by the Uhrig report while also providing a form of collective decision-making and expert policy advice suitable for an agency such as ACIAR.
The new provisions do not alter ACIAR's mandate and functions and will have no financial impact

Board of Management

Until the end of June 2007, the Board of Management was responsible for the overall corporate governance of ACIAR under Section 7 of the *Australian Centre for International Agricultural Research Act 1982* (ACIAR Act). Through consultation with the Minister, the Board set the strategic directions of the Centre, with the Director and senior management having responsibility for implementing and managing these directions. The Board was committed to achieving the highest possible standards of corporate governance, emphasising performance-oriented management practices and accountability to Parliament and the Minister. The Board's role was to:

- establish policy and agree on high-level strategic issues
- advise the Minister in relation to the appointment of the Director, and guide and monitor the performance of the Director
- ensure good corporate governance
- promote ACIAR and its key relationships
- approve research projects.

In fulfilling these roles the Board monitored corporate and program performance and provided feedback on program development. Project proposals were presented during the early stages of their development, and the Board approved research projects in the bilateral and multilateral programs (subject to subsequent endorsement by the Minister). The Board monitored and appraised the Director's performance and ensured that operational plans and control processes were in place and working.

Board composition

The Board was comprised of five members:

- the Chair, who was also the President of the Policy Advisory Council (see later section on the Policy Advisory Council)
- the Director (CEO) of ACIAR
- three part-time members of the Policy Advisory Council.

In recognition of the strong linkages between ACIAR and AusAID, the Director General of AusAID was invited to attend Board meetings. Details of Board members as at 30 June 2007 are on page 123.

Board meetings

The Board held six meetings in 2006–07, as follows:

108th meeting	23–28/7/06	Thailand, Lao PDR, Cambodia
109th meeting	7/9/06	Canberra
110th meeting	30/11/06	Canberra
111th meeting	8/2/07	Canberra
112th meeting	16/4/07	Canberra
113th meeting	2/5/07	Canberra

Dr Meryl Williams
Chair

Member of the Aid Advisory Council, former Executive Officer of the Future Harvest Alliance Office, former Chair of the FAO Advisory Committee on Fisheries Research, Director General of WorldFish Center from 1994 to 2004, Fellow of the Australian Academy of Technological Science and Engineering, a world leader in fisheries research and research for development.

Appointed 5 August 2004 for 3 years.

Meetings attended: 7

Mr Peter Corish
Member

National Water Commissioner, former President of the National Farmers' Federation, Chair of the Cairns Group Farm Leaders, and a member of the International Federation of Agricultural Producers Executive.

He has previously held the position of Chairman of Cotton Australia Limited and Chairman of the Australian Cotton Industry Council, and has served on the NFF Executive Committee since 1999.

Appointed 1 December 2003 for 3 years; reappointed 1 December 2006 for 1 year.

Meetings attended: 7

Ms Joanna Hewitt
Member

Secretary, Federal Department of Agriculture, Fisheries and Forestry, and former Deputy Secretary of the Federal Department of Foreign Affairs and Trade.

She was Australia's Ambassador in Brussels from 2000–03 and before that Deputy Secretary of the Federal Department of Foreign Affairs and Trade, and Australia's APEC Ambassador.

Appointed 1 December 2005 for 3 years.

Meetings attended: 5

Dr John Williams
Member

Commissioner for Natural Resources Commission in NSW, and former Chief of CSIRO Land and Water. Dr Williams is one of Australia's leading experts on sustainable agricultural practices, the nature of agriculture as part of the natural ecosystem and its integration into natural resources management.

Appointed 25 July 2002 for 3 years; reappointed 7 July 2005 for 3 years.

Meetings attended: 7

Mr Peter Core
Director

Director of ACIAR since 31 July 2002. Former Managing Director of the Rural Industries Research and Development Corporation and held numerous senior positions in the Australian Public Service.

Appointed 31 July 2002 for 5 years; reappointed 31 July 2007 for 2 years.

Meetings attended: 7

Board performance

During 2006–07 major milestones for the Board included:

- finalisation of a performance agreement with the Director for 2006–07 and monitoring of his performance for that period
- development of the Annual Operational Plan for 2007–08 which seeks to codify program priorities for partner countries and provide enhanced operational transparency
- strategic directions for ACIAR in India
- a survey of overseas stakeholders
- implementation of the review of ACIAR's corporate governance framework and practices following the *Review of Corporate Governance of Statutory Authorities and Office Holders*
- approval of 12 medium and 38 large projects for commencement.

Conflict of interest

Board membership represents stakeholder organisations involved in agriculture, this having the potential to give rise to a conflict of interest in some decisions. Project approval with institutions from which Board members are drawn is the most notable example. Members are required to disclose any interests that may affect their position and, where a conflict exists, the relevant Board member(s) must withdraw from a decision on that particular matter. Potential conflicts are recorded in the Board Minutes which are available for consideration by the Centre's Auditors.

Ministerial delegations, instruments and directions

Section 37 of the ACIAR Act allows the Minister to delegate authority to the Board for the approval of contracts for the carrying out of agricultural research (ACIAR's research projects). The Director has delegated authority from the Minister to approve research projects and variations to projects of up to $165,000, inclusive of GST, and to enter into all contracts for projects approved by the Board. The Board reports to the Minister on the exercise of this delegation after every Board meeting. This mechanism enables the Minister to review proposed project-specific decisions to ensure consistency with broader portfolio considerations.

The Deputy Director (Research and Development) and Research Program Managers have delegated authority from the Minister to approve research projects of up to $165,000 inclusive of GST, and $50,000 inclusive of GST, respectively.

The Minister may give directions in writing to the Board with respect to the exercise of its powers or the performance of its functions. This includes directions with respect to the commissioning of particular research.

In 2006–07 there were no directions given, though the Minister indicated his desire for ACIAR to:

- take action on some of Tonga's current agricultural research needs in addition to other agricultural, fisheries and forestry matters taken up in context of ACIAR's overall bilateral partnership with Tonga; and
- proceed with a multilateral project at improving food security, nutritional health and livelihood needs of poor farmers and communities in the Central Dry Zone of Burma through enhancing legume production. This activity is consistent with Australia's humanitarian assistance to Burma.

Board costs

The direct cost of Board operations during 2006–07 was $50,893, including fees, travel and other meeting expenses. The Director's salary and other management costs are not included. The comparative figure for 2005–06 was $45,952.

Board remuneration

The Remuneration Tribunal sets fees for the Chair and Members of the Board. The annual fee for the Chair was $32,750 and daily fees for Members (other than the Director) were $488 as at 30 June 2007.

The remuneration of the Director is subject to the relevant determinations of the Remuneration Tribunal. These provisions enable the Board to determine the total remuneration, superannuation salary and performance pay components of the remuneration package, within the parameters of Remuneration Tribunal Determination 2005/19.

The Director's remuneration package at 30 June 2007 consisted of:

- base salary of $178,405
- PSS superannuation with an employer contribution of 15.4% of base salary,
- annual performance bonus of up to a maximum of $38,511 (for 2006–07 $24,439 bonus was paid)
- productivity increase of 4.4%
- other negotiable benefits, consisting of car and spouse travel.

Implementation of the Uhrig review

ACIAR, as a statutory authority of the Department of Foreign Affairs and Trade, was reviewed by the Department and the Portfolio Minister, following the *Review of Corporate Governance of Statutory Authorities and Office Holders* Report by Mr John Uhrig.

As a result the *Australian Centre for International Agricultural Research Amendment Act 2007* was promulgated by Royal Assent on 28 June 2007. It provides for changes to the governance arrangements of ACIAR from a Board of Management to an executive management structure involving a Chief Executive Officer (CEO) and a seven-member Commission. The formation of the Commission will take place during 2007–08.

Financial accountability and compliance

As a statutory authority, ACIAR is subject to the policy guide-lines determined by government from time to time regarding accountability, reporting, review and general operations and is accountable through the Minister to the parliament. It is also subject to government financial and accounting policies and procedures. Staff members are employed under the *Public Service Act 1999*. Within these constraints, the centre has the power to do all things it considers appropriate for the performance of statutory functions.

ACIAR derives its financial authority from the ACIAR Act. Under the ACIAR Act the Centre, as a body corporate, may acquire, fold and dispose of real and personal property, and may sue and be sued in its corporate name. Financial powers and duties derive from the *Financial Management and Accountability Act 1997* (FMA Act) and subordinate regulations and Orders.

During 2006–07 the ACIAR Board of Management worked closely with the Department of Foreign Affairs and Trade (DFAT) to address the Government's decision to make changes to the governance arrangements in ACIAR as part of the implementation of the Government's response to the *Review of Corporate Governance of Statutory Authorities and Office Holders* undertaken by Mr John Uhrig. The principal decision was to change the governance arrangements of ACIAR from a Board of Management to an executive management structure involving a Chief Executive Officer (CEO) and a seven-member Commission, with the CEO reporting directly to the Minister. The necessary legislative changes were encompassed in the *Australian Centre for International Agricultural Agriculture Amendment Act 2007* which was assented to in June 2007.

The Centre follows accounting practices in accordance with the FMA Act and other related legislation and recognised accounting standards. ACIAR's Annual Financial Statements, presented in accrual accounting format on pages 136–168 of the report, along with all financial transactions made by the Centre, are subject to examination by the Australian National Audit Office.

Insurances

Comcover, as the manager of the Commonwealth's insurable risks, provides corporate insurance for the Centre. Comcover's coverage includes general and products liability, professional indemnity, Director's and officer's liability, property loss and damage, personal accident and official overseas travel. The cost of insurance for 2006–07 was $64,473 (excluding GST). The premium paid in 2005–06 was $89,800.

Liability and professional indemnity insurances were not required to be invoked in 2006–07.

Risk Management Plan

In May 2006, ACIAR reviewed and redesigned its Risk Management Plan. The review was designed both to update the plan and to simplify its presentation to improve its usefulness and transparency. The review also recognised that risks are not static and that the plan should be utilised in conjunction with a number of other complementary activity statements including:

- ACIAR's Fraud Control Plan 2005–07
- ACIAR's Security Plan 2006
- ACIAR's Business Continuity Plan 2004

In reviewing this plan a number of changes have been made to the previous versions:

- The plan now includes an identification of key strategic risks and actions
- A business risk framework with 12 risk

categories has been introduced with linkages to the strategic risk profile
- The overall business/operational risk register has been re-examined and re-weighted in the context of the current corporate and governmental environment
- The overall risk register has been simplified and the risks are accompanied by a short risk attribution comment on most risks
- The register again nominates the key officers responsible for each risk control action to ensure staff inclusiveness. It is recognised that risk management is the ongoing responsibility of the executive and all staff in the organisation.

The plan also differs from previous approaches by identifying 12 key 'significant' residual risks and associated action plans for management to address and ameliorate (not eliminate) the nominated risks. In May 2007 an Annual Progress Report was submitted to the ACIAR Board of Management.

Certification of fraud measures

The Centre's Fraud Control Plan 2006–07 and current fraud risk assessment comply with the *Commonwealth Fraud Control Guidelines* issued in May 2002.

The Centre has in place fraud prevention, detection, investigation, reporting and annual fraud data collection procedures and processes that meet the Centre's specific needs and comply with the guidelines.

The Audit Committee oversees implementation of the Fraud Control Plan. The plan is brought to the attention of new staff as part of the Centre's induction process and is available electronically to all staff.

Audit Committee

ACIAR's Audit Committee is established in accordance with Section 46 of the *Financial Management and Accountability Act 1997*. The Committee promotes and facilitates communication between the Centre's auditors (both internal and external) and management. The Committee has the objectives of:

- providing advice to the Director and Board of Management that ACIAR's control framework is in place and working effectively
- ensuring the objectivity and reliability of externally published financial information
- ensuring the Director and Board of Management that adequate systems are in place to ensure that ACIAR complies with all legislative and other requirements.

In fulfilling its corporate governance responsibilities and overall accountability for the Centre's operations, the Board of Management provides advice on each 3–year audit program, and provides general advice on arrangements for the Audit Committee and on audit matters arising from the Committee's deliberations.

Four Audit Committee meetings were held in 2006–07. Audit Committee membership and attendance during the year were as shown in the following table.

Member		Meetings attended
Mr L Early	Chair	4
Ms L Atkinson	External Member	3
Dr R Trewin	Centre Program Manager (appointed 1 July 2004) (ceased 31 December 2006)	2
Dr S Hearn	Centre Senior Advisor (appointed 28 April 2005)	4
Dr J Davis	Centre Program Manager (appointed 1 Janurary 2006)	4

Internal Audit

ACIAR Management provides an audit report to each Board meeting. The Audit Committee Chair attends two Board meetings to:

- present an updated annual Audit Plan for endorsement
- present audited financial Statements for Board sign-off.

The Chair of the Audit Committee is an external appointee and each Committee meeting is supported by advisers from our external auditors (ANAO), internal auditors (RSM Bird Cameron) and the Centre's Finance Unit, with the Finance Manager and Accountant both ex-officio members and responsible for Secretariat support.

RSM Bird Cameron was contracted to undertake various internal audit reviews to support the Committee. Internal audit reviews conducted in 2006–07 were:

- Travel and Credit Cards
- IT Security Follow
- Records Management.#

 # Audit fieldwork completed in 2006–07; final report received after 1 July 2007.

In addition, a strategic audit of ACIAR's IARC program was undertaken by RSM Bird Cameron. Fieldwork has been completed and a final report will be received in early 2007–08.

Audit Program 2005–08

The current audit program provides a more strategic focus. The program includes strategic audits of major decisions made by the Board of Management over recent years and has tailored a program to assess the impact these decisions have had. Normal compliance audits will continue, but the timeframe has been extended based on satisfactory results of recent audit work.

The Director / Chief Executive Officer

The office and role of Director as the Chief Executive Officer of the Centre is established under Section 24 of the ACIAR Act. Subject to, and in accordance with, the general directions of the Board, the Director manages the affairs of the Centre and controls staff. Specifically, the Director's functions are to:

- develop strategic and operational plans for presentation to, and approval by, the Board of Management and ensure that these plans and their component parts are implemented
- ensure the Board of Management is provided with relevant and timely decision support information
- ensure the Board of Management is properly informed about evolving key issues and alternatives for dealing with them
- manage the operational functions of the Centre consistent with its strategic and operational plans
- provide Centre staff with strong and empowering leadership to enhance the motivation, focus and satisfaction they derive from their contribution to the Centre
- nurture and enhance research alliances and represent and promote the Centre at forums and workshops
- maximise the adoption of research outputs.

The Director is appointed by the Governor-General for a term of up to 7 years and is subject to the determinations of the Remuneration Tribunal. The Tribunal has determined the Director to be an officer in the Principal Executive Officer (PEO) structure, at PEO Band C. The Board of Management is the identified Employing Body for remuneration purposes.

The current Director, Mr Peter Core, was appointed to a second term in the position until 30 July 2009. This appointment is in accordance with the new ACIAR governance framework outlined on page 121 of this Annual Report. Under this framework the Board of Management has ceased to exist and the Director has assumed the full duties of a Chief Executive Officer (CEO) and Head of Agency as set out in Part 7 of the *Financial Management and Accountability Act (1997*) and Part 9 of the *Public Service Act (1999*) respectively. The CEO is not subject to direction by the new Commission in relation to the performance of functions or exercise of powers under these Acts.

These governance provisions stipulate that the CEO is now directly responsible to the Minister for managing the affairs of ACIAR in a way that provides proper use of the Commonwealth resources for which the CEO is responsible. As Agency Head, he/she is also responsible for managing the agency with direct accountability to the Government, the Parliament and the public.

Policy Advisory Council

Council composition

Council membership is limited to 14, comprising a President (the Chair of the Board of Management), ACIAR's Director, the Director General of AusAID or his nominee and not fewer than nine, nor more than 11, other members appointed by the Minister for Foreign Affairs. Members are appointed from stakeholder organisations in Australia and partner countries to bring a range of agricultural and development experience. The Minister is required, under the ACIAR Act, to ensure that a substantial number of the members of the Council are residents of countries other than Australia, and to have regard for the knowledge of appointees concerning the agricultural problems of developing countries or their experience in organising or conducting agricultural research.

The Policy Advisory Council is established under Section 17 of the ACIAR Act. The Council's function is to provide advice to the Minister regarding:

(a) agricultural problems of developing countries
(b) programs and policies with respect to agricultural research for either or both of the following purposes:
    (i) identifying agricultural problems of developing countries
    (ii) finding solutions to agricultural problems of developing countries.

The role of the Council utilises stakeholder knowledge to provide a valuable overview for advising the Minister, the Board of Management and the Centre on matters including:

- national and regional development constraints
- opportunities for research and development collaboration
- national and regional research priorities, particularly those of ACIAR's partner countries;
- the matching of Australian expertise (Australia's competitive advantage) with these priorities
- modes of operation for ACIAR
- sources of national and international expertise.

Council meeting

Council meetings are held annually, in Australia, over several days to discuss areas related to its role and functions. During 2006–07 the Council met in Canberra on 21 May 2007. The program included discussions with the Minister in Canberra, and was followed by field visits and meetings with Australian research providers and stakeholders in Melbourne, Geelong, Werribee, Horsham, Nhill, Birchip and Mildura from 22–25 May.

At its meeting, the Council gave priority consideration to:

- research priorities as set out in a draft of the Centre's 2007–08 Annual Operational Plan
- key findings of a survey of overseas stakeholders on ACIAR's operations
- aspects of ACIAR's program that have a direct bearing on climate change and its alignment with the draft whole-of-government environment strategy for the aid program
- Australia's regulatory framework for managing genetically modified organism
- key issues relating to ACIAR's new governance framework as developed in response to the findings of the Australian Government's Uhrig *Review of Corporate Governance of Statutory Authorities and Office Holders*
- a presentation from AusAID on the increase in aid funding from the Australian Government which was the culmination of the Aid White Paper.

Council costs

During 2006–07, the direct costs of the Policy Advisory Council were $19,590, compared with a figure $20,038 for 2005–06. Membership of the Council at the time of its meeting in Canberra on 21 May 2007, and attendance, is set out in the accompanying table. All members attended all meetings.

Council membership* (as at 30 June 2007)

Member	Term of appointment
Dr Meryl Williams Aid Advisory Council Canberra ACT	President 5 August 2004 – 4 August 2007
Mr Brown Bai Chairman Rural Industries Council Port Moresby PAPUA NEW GUINEA	Appointed member 7 March 2005 – 6 March 2008
Mr Peter Core Director ACIAR Canberra ACT	Ex-officio member 31 July 2002 – 30 July 2007 31 July 2007 – 30 July 2009
Mr Peter Corish Commissioner National Water Commission Canberra ACT	Appointed member 1 December 2003 – 30 November 2006 1 December 2006 – 30 November 2007
Mr Bruce Davis Director General AusAID Canberra ACT	Ex-officio member
Dr Patricio Faylon Executive Director Philippine Council for Agriculture, Forestry and Natural Resources Research and Development Los Baños PHILIPPINES	Appointed member 10 March 2003 – 9 March 2005 10 March 2005 – 9 March 2008
Ms Joanna Hewitt Secretary Department of Agriculture, Fisheries and Forestry Canberra ACT	Appointed member 1 December 2005 – 30 November 2008**
Mr Jia Jingdun Deputy Director General Ministry of Science and Technology Beijing CHINA	Appointed member 10 March 2003 – 9 March 2006 10 March 2006 – 9 March 2009
Dr Nguyen Van Bo President Vietnamese Academy of Agricultural Sciences Hanoi VIETNAM	Appointed member 1 March 2004 – 28 February 2007 1 May 2007 – 30 April 2010
Dr Mangala Rai Secretary Department of Agricultural Research and Education and Director General Indian Council of Agricultural Research New Delhi INDIA	Appointed member 10 March 2003 – 9 March 2006 1 May 2007 – 30 April 2010
Dr Achmad Suryana Director General Indonesian Agency for Agricultural Research and Development Jakarta INDONESIA	Appointed member 1 September 2005 – 31 August 2008
Dr John Williams Commissioner Natural Resources Commission Sydney NSW	Appointed member 16 July 2002 – 30 June 2005 7 July 2005 – 6 July 2008

* *There were two vacancies as at 30 June 2007*

** *Ms Joanna Hewitt resigned from the Council on 30 June 2007*

ACIAR Policy Advisory Council, 27th meeting, 21–25 May 2007.
L to R: Mr Peter Core (ACIAR Director/CEO), Dr Achmad Suryana (Indonesia), Mr Brown Bai (PNG), Mr Sam Beever, Dr Mangala Rai (India), Dr John Williams (Australia), Dr Meryl Williams (President), Mr Jia Jingdun (China), Dr Patricio Faylon (Philippines), Minister for Foreign Affairs, the Hon. Alexander Downer, MP, Dr Nguyen Van Bo (Vietnam), Dr John Skerritt (ACIAR Deputy Director/EO), Professor Tim Reeves, Professor Graeme Robertson, Mr Peter Corish (Australia)

Chief Finance Officer's review

Funding and other revenue

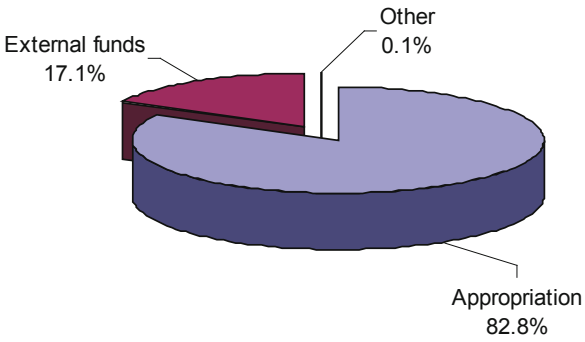
ACIAR's funding is mainly provided through Commonwealth appropriation, as determined in the Federal Budget in May each year. In 2006–07 our appropriation was $50.362 million. This appropriation is supplemented through:

- co-funding of projects by AusAID and the Australian Greenhouse Office
- a small revenue flow from the sale of ACIAR scientific publications.

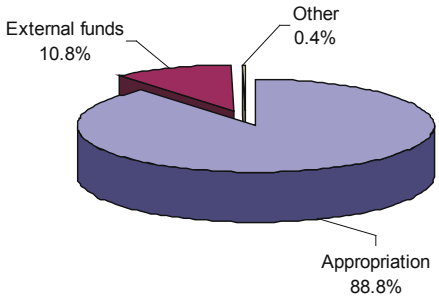
Additional funding from AusAID for both projects and training activities has increased in 2006–07. External funds in 2006–07 totalled $10.422 million compared to $6.016 million in 2005–06.

Appropriation has remained constant in real terms during the past 5 financial years. Total income for 2006–07 was $60.898 million.

ACIAR Revenue 2006–07



ACIAR Revenue 2005–06

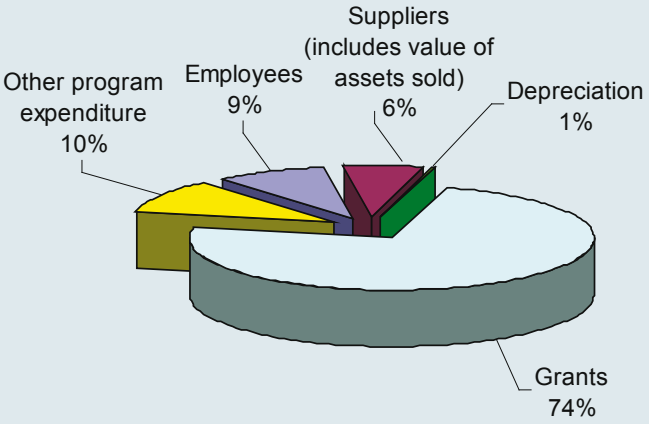


Program and operational costs

ACIAR's mandate directs the Centre to fund both bilateral and multilateral research and training activities (including educational fellowships), for the benefit of developing countries and Australia. In addition, ACIAR disseminates publications and measures the impacts of its projects.

These activities account for 84% of expenditure, expressed as grants and other program expenditure in the chart below.

ACIAR Expenditure 2006–07

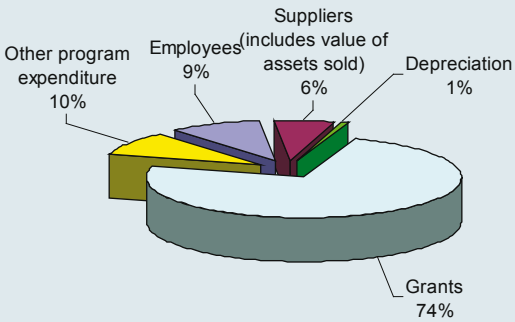


Expenditure

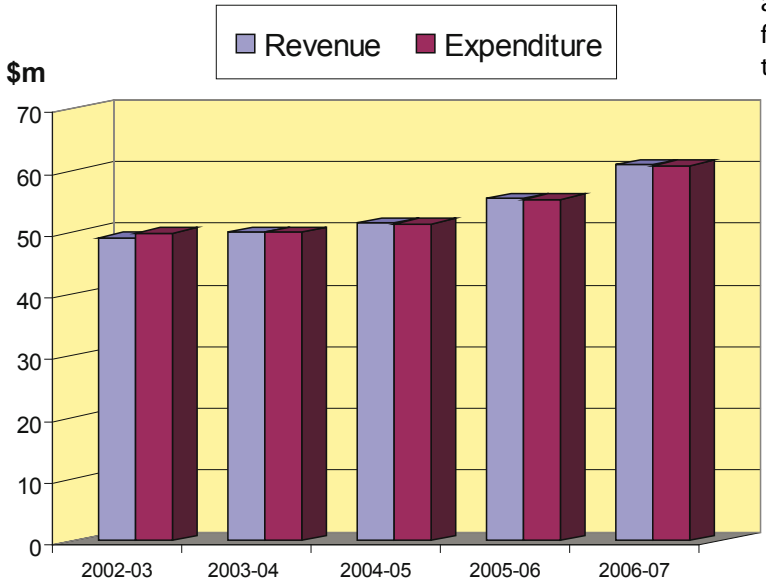
The costs of supporting these operations, in staffing and administration, accounts for the remaining 16% of expenditure. This has remained constant over the past 2 years.

Total expenses in 2006–07 were $60.843 million.

ACIAR Expenditure 2005–06



Revenue and expenditure



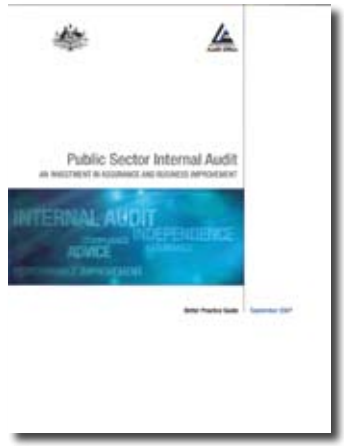
Operating result and financial position

ACIAR operates a balanced budget and aims to achieve a small surplus each financial year. In 2006–07 this surplus was $55,341.

Accounting policies

ACIAR complies with relevant accounting standards, relevant legislation and the Finance Minister's Orders. ACIAR's Executive and Finance Section work closely to deliver a balanced budget, including responding to the emerging needs of the Australian Government in delivering effective aid.

Financial statements



ACIAR's finance team

Paul Tyrrell

Anni Sugiono

Henry Lee

Frances McPherson

Australian National
Audit Office

INDEPENDENT AUDITOR'S REPORT

To the Minister for Foreign Affairs

Matters relating to the Electronic Presentation of the Audited Financial Statements

This auditor's report relates to the financial statements published on the website of the Australian Centre for International Agricultural Research for the year ended 30 June 2007. The Australian Centre for International Agricultural Research's Chief Executive is responsible for the integrity of the website.

This auditor's report refers only to the primary statements, schedules and notes named below. It does not provide an opinion on any other information which may have been hyperlinked to/from the audited financial statements.

If users of this report are concerned with the inherent risks arising from electronic data communications they are advised to refer to the hard copy of the audited financial statements in the Australian Centre for International Agricultural Research's annual report.

Scope

I have audited the accompanying financial statements of the Australian Centre for International Agricultural Research for the year ended 30 June 2007, which comprise: a statement by the Chief Executive and Chief Finance Officer; income statement; balance sheet; statement of changes in equity; cash flow statement; schedules of commitments and contingencies; a summary of significant accounting policies; and other explanatory notes.

The Responsibility of the Chief Executive for the Financial Statements

The Australian Centre for International Agricultural Research's Chief Executive is responsible for the preparation and fair presentation of the financial statements in accordance with the Finance Minister's Orders made under the *Financial Management and Accountability Act 1997* and the Australian Accounting Standards (including the Australian Accounting Interpretations). This responsibility includes establishing and maintaining internal control relevant to the preparation and fair presentation of the financial statements that are free from material misstatement, whether due to fraud or error; selecting and applying appropriate accounting policies; and making accounting estimates that are reasonable in the circumstances.

Auditor's Responsibility

My responsibility is to express an opinion on the financial statements based on my audit. My audit has been conducted in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards. These Auditing Standards require that I comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance whether the financial statements are free from material misstatement.

GPO Box 707 CANBERRA ACT 2601
19 National Circuit BARTON ACT 2600
Phone (02) 6203 7300 Fax (02) 6203 7777

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Australian Centre for International Agricultural Research's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Australian Centre for International Agricultural Research's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the Australian Centre for International Agricultural Research's Chief Executive, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Independence

In conducting the audit, I have followed the independence requirements of the Australian National Audit Office, which incorporate the ethical requirements of the Australian accounting profession.

Auditor's Opinion

In my opinion, the financial statements of the Australian Centre for International Agricultural Research:

(a) have been prepared in accordance with the Finance Minister's Orders made under the *Financial Management and Accountability Act 1997*, and the Australian Accounting Standards (including the Australian Accounting Interpretations); and

(b) give a true and fair view of the matters required by the Finance Minister's Orders including the Australian Centre for International Agricultural Research's financial position as at 30 June 2007 and of its financial performance and its cash flows for the year then ended.

Australian National Audit Office

Ron Wah
Senior Director

Delegate of the Auditor-General

Canberra
3 September 2007

Statement by the Chief Executive Officer and Chief Finance Officer

AUSTRALIAN CENTRE FOR INTERNATIONAL AGRICULTURAL RESEARCH

STATEMENT BY THE CHIEF EXECUTIVE OFFICER AND CHIEF FINANCE OFFICER

In our opinion, the attached financial statements for the year ended 30 June 2007 have been prepared based on properly maintained financial records and give a true and fair view of the matters required by the Finance Minister's Orders made under the *Financial Management and Accountability Act 1997*, as amended.

Signed.....

Peter Core
Chief Executive Officer

3 September 2007

Signed .....

Paul Tyrrell
Chief Finance Officer

3 September 2007

AUSTRALIAN CENTRE FOR INTERNATIONAL AGRICULTURAL RESEARCH
INCOME STATEMENT
for the year ended 30 June 2007

	Notes	2007 $'000	2006 $'000
INCOME			
Revenue			
Revenues from Government	3A	**50,362**	49,334
Sale of goods and rendering of services	3B	**13**	17
External funds revenue	3C	**10,422**	6,017
Other revenues	3C	**64**	187
Total Revenue		**60,861**	55,555
Gains			
Sale of assets	3E	**14**	-
Other Gains	3D	**23**	23
Total Gains		**37**	23
TOTAL INCOME		**60,898**	55,578
EXPENSES			
Administration			
Employee Benefits	4A	**5,327**	5,177
Suppliers	4B	**3,903**	3,483
Depreciation and amortisation	4D	**307**	319
Write-down and impairment of assets	4E	**-**	21
Losses from asset sales	4G	**-**	12
Program expenditure			
Grants	4C	**44,924**	41,107
Other program expenditure	4F	**6,382**	5,300
TOTAL EXPENSES		**60,843**	55,419
Surplus (Deficit) before income tax		**55**	159
Income tax expense		**-**	-
Surplus (Deficit) attributable to the Australian Government		**55**	159

The above statement should be read in conjunction with the accompanying notes.

AUSTRALIAN CENTRE FOR INTERNATIONAL AGRICULTURAL RESEARCH
BALANCE SHEET
as at 30 June 2007

	Notes	2007 $'000	2006 $'000
ASSETS			
Financial Assets			
Cash and cash equivalents	6A	**4,932**	470
Trade and other receivables	6B	**2,389**	6,500
Total Financial Assets		**7,321**	6,970
Non-Financial Assets			
Land and buildings	7A, 7C	**425**	483
Infrastructure, plant and equipment	7B, 7C	**382**	316
Intangibles	7D	**169**	207
Other non-financial assets	7E	**347**	399
Total Non-Financial Assets		**1,323**	1,405
TOTAL ASSETS		**8,644**	8,375
LIABILITIES			
Payables			
Suppliers	8A	**315**	571
Grants	8B	**1,820**	1,202
Other payables	8C	**4,399**	4,419
Total payables		**6,534**	6,192
Provisions			
Employee provisions	10A	**1,227**	1,355
Total provisions		**1,227**	1,355
TOTAL LIABILITIES		**7,761**	7,547
NET ASSETS		**883**	828
EQUITY			
Reserves		**325**	325
Retained surplus (accumulated deficit)		**558**	503
TOTAL EQUITY		**883**	828
Current Assets		**7,669**	7,369
Non-current Assets		**976**	1,006
Current Liabilities		**7,644**	7,463
Non-current Liabilities		**117**	84

The above statement should be read in conjunction with the accompanying notes.

AUSTRALIAN CENTRE FOR INTERNATIONAL AGRICULTURAL RESEARCH
STATEMENT OF CHANGES IN EQUITY
for the year ended 30 June 2007

	Retained Surplus		Asset Revaluation Reserves		TOTAL EQUITY	
	2007	2006	**2007**	2006	**2007**	2006
	$'000	$'000	**$'000**	$'000	$'000	$'000
Opening balance						
Balance carried forward from previous period	**503**	344	325	-	**828**	344
Adjusted opening balance	**503**	344	325	-	**828**	344
Income and expense						
Revaluations recognised Directly in Equity	**-**	-	**-**	325	**-**	325
Sub-total income and expenses recognised Directly in Equity	**-**	-	**-**	325	**-**	325
Surplus (Deficit) for the period	**55**	159	**-**	-	**55**	159
Total Income and Expenses	**55**	159	**-**	325	**55**	484
Transfers to/(from)/between reserves	**-**	-	**-**	-	**-**	-
Closing balance as at 30 June attributable to the Australian Government	**558**	503	325	325	**883**	828

The above statement should be read in conjunction with the accompanying notes.

AUSTRALIAN CENTRE FOR INTERNATIONAL AGRICULTURAL RESEARCH
CASH FLOW STATEMENT
for the year ended 30 June 2007

	Notes	2007 $'000	2006 $'000
OPERATING ACTIVITIES			
Cash received			
Goods and services		**16**	15
Appropriations		**48,777**	46,460
Net GST received		**3,398**	3,170
External Funds		**17,204**	8,391
Other cash received		**175**	11
Total cash received		**69,570**	58,046
Cash used			
Employees		**5,416**	5,221
Suppliers		**3,749**	3,722
Net GST paid		**1,386**	565
Grants		**47,394**	41,743
Other program expenditure		**6,893**	6,564
Total cash used		**64,838**	57,815
Net cash from operating activities	12	**4,732**	232
INVESTING ACTIVITIES			
Cash received			
Proceeds from sales of property, plant and equipment		**11**	1
Total cash received		**11**	1
Cash used			
Purchase of property, plant and equipment	7C	**275**	285
Purchase of intangibles	7D	**6**	58
Total cash used		**281**	343
Net cash (used by) investing activities		**(270)**	(342)
Net increase or (decrease) in cash held		**4,462**	(110)
Cash at the beginning of the reporting period		**470**	580
Cash at the end of the reporting period	6A	**4,932**	470

The above statement should be read in conjunction with the accompanying notes.

AUSTRALIAN CENTRE FOR INTERNATIONAL AGRICULTURAL RESEARCH
SCHEDULE OF COMMITMENTS
as at 30 June 2007

	2007 $'000	2006 $'000
BY TYPE		
Commitments Receivable		
GST recoverable on commitments	**(354)**	(645)
Other Commitments		
Operating leases[1]	**2,126**	2,685
Project commitments[2]	**53,878**	56,189
Total Other Commitments	**56,004**	58,874
Net Commitments by Type	**55,650**	58,229
BY MATURITY		
Commitments Receivable	**(354)**	(645)
Operating lease commitments		
One year or less	**586**	588
From one to five years	**1,540**	2,097
Total Operating Lease Commitments	**2,126**	2,685
Other Commitments		
One year or less	**27,948**	29,310
From one to five years	**25,930**	26,879
Total Other Commitments	**53,878**	56,189
Net Commitments by Maturity	**55,650**	58,229

NB: Commitments are GST inclusive where relevant.

[1] Operating leases included are effectively non-cancellable and comprise:

- leases for office accommodation; and
- agreements for the provision of motor vehicles to senior executive officers.

[2] As at 30 June 2007, project commitments comprise amounts committed under grant agreements in respect of which the recipient is yet to either perform the services required, or meet eligibility conditions.

These have not been recognised as liabilities in the statement of assets and liabilities.

The above statement should be read in conjunction with the accompanying notes.

AUSTRALIAN CENTRE FOR INTERNATIONAL AGRICULTURAL RESEARCH
SCHEDULE OF CONTINGENCIES

for the year ended 30 June 2007

There are no contingent assets or contingent liabilities at year-end.

There are no unquantifiable or remote contingencies.

AUSTRALIAN CENTRE FOR INTERNATIONAL AGRICULTURAL RESEARCH
NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS
for the year ended 30 June 2007

Note 1. Summary of significant accounting policies

1.1 Objectives of ACIAR

ACIAR is an Australian Public Service organisation. ACIAR's mission is to achieve more productive and sustainable agricultural systems, for the benefit of developing countries and Australia, through international agricultural research partnerships. Developing countries are the major beneficiaries but there are also spin-offs for Australia. To achieve this goal, ACIAR facilitates and supports bilateral and multilateral research and development activities in a broad range of agricultural areas, including crops, animals, fisheries, forestry, land and water resources management, post-harvest technology, and economic studies of agricultural and natural resource utilisation.

ACIAR is structured to meet one outcome:

> Agriculture in developing countries and Australia is more productive and sustainable as a result of better technologies, practices, policies and systems.

The outcome is identified under two outputs:

- Collaborative research that addresses agricultural and natural resource management problems of developing countries and Australia.
- Trained researchers in developing countries and Australia.

Although an increasing portion of ACIAR's revenue is from external sources, the continued existence of ACIAR in its present form and with its present programs is mainly dependent on Government policy and on continuing appropriations by Parliament for ACIAR's administration and programs.

During 2006-07 the ACIAR Board of Management worked closely with the Department of Foreign Affairs and Trade (DFAT) to address the Government's decision to make changes to the governance arrangements in ACIAR as part of the implementation of the Government's response to the Review of Corporate Governance of Statutory Authorities and Office Holders undertaken by Mr John Uhrig AC. The principal decision was to change the governance arrangements of ACIAR from a Board of Management to an executive management structure involving a Chief Executive Officer (CEO) and a seven member Commission, with the CEO reporting directly to the Minister. The necessary legislative changes were encompassed in the *ACIAR Amendment Act 2007* which was assented to in June 2007.

1.2 Basis of preparation of the Financial Report

The Financial Statements and notes are required by Section 49 of Schedule 1 to the *Financial Management and Accountability Act 1997* and are a general purpose financial report.

The Financial Statements and notes have been prepared in accordance with:

- Finance Minister's Orders (or FMOs, being the *Financial Management and Accountability Orders (Financial Statements for reporting periods ending on or after 1 July 2006))*; and

- Australian Accounting Standards and Interpretations issued by the Australian Accounting Standards Board that apply for the reporting period.

Unless alternative treatment is specifically required by an Accounting Standard or the FMOs, assets and liabilities are recognised in the Balance Sheet when and only when it is probable that future economic benefits will flow to ACIAR and the amounts of the assets or liabilities can be reliably measured. However, assets and liabilities arising under agreements equally proportionately unperformed are not recognised unless required by an Accounting Standard. Liabilities and assets which are unrealised are reported in the Schedule of Commitments and the Schedule of Contingencies.

Unless alternative treatment is specifically required by an Accounting Standard, revenues and expenses are recognised in the Income Statement when and only when the flow, consumption or loss of economic benefits has occurred and can be reliably measured.

1.3 Significant accounting judgments and estimates

In the process of applying accounting policies listed in this note, ACIAR has made the following judgments that have the most significant impact on the amounts recorded in the financial statements:

- Infrastructure, plant and equipment has been revalued to estimated fair values.
- Provisions for employee benefits have been estimated on the basis of the present value of expected future cash outflows in respect of services provided.

No accounting assumptions or estimates have been identified that have a significant risk of causing a material adjustment to carrying amounts of assets and liabilities within the next accounting period.

1.4 Statement of Compliance

Australian Accounting Standards require a statement of compliance with International Financial Reporting Standards (IFRSs) to be made where the financial report complies with these standards. Some Australian equivalents to IFRSs and other Australian Accounting Standards contain requirements specific to not-for-profit entities that are inconsistent with IFRS requirements. ACIAR is a not-for-profit entity and has applied these requirements, so while this financial report complies with Australian Accounting Standards including Australian Equivalents to International Financial Reporting Standards (AEIFRSs) it cannot make this statement.

Except for the amendments to AASB 101 *Presentation of Financial Statements* and AASB 2007-4 *Amendments to Australian Accounting Standards arising from ED 151 and Other Amendments*, which ACIAR has early adopted, Australian Accounting Standards and Interpretations that have recently been issued or amended but are not yet effective have not been adopted by ACIAR for the annual reporting period ending 30 June 2007. These are outlined in the Table 1.4.

Table 1.4

Reference	Title	Summary	Application date of standard*	Impact on Group financial report	Application date for ACIAR*
AASB 2005-10	Amendments to Australian Accounting Standards [AASB 132, AASB 101, AASB 114, AASB 117, AASB 133, AASB 139, AASB 1, AASB 4, AASB 1023 & AASB 1038]	Amending standard issued as a consequence of AASB 7 *Financial Instruments: Disclosures.*	1 January 2007	AASB 7 is a disclosure standard so will have no direct impact on the amounts included in ACIAR's financial statements. However, the amendments will result in changes to the financial instrument disclosures included in ACIAR's financial report.	1 July 2007
AASB 2007-2	Amendments to Australian Accounting Standards arising from AASB Interpretation 12 [AASB 1, AASB 117, AASB 118, AASB 120, AASB 121, AASB 127, AASB 131 & AASB 139]	Amending standard issued as a consequence of AASB Interpretation 12 *Service Concession Arrangements*.	1 January 2007	ACIAR currently has no service concession arrangements or public-private-partnerships (PPP), so the standard is not expected to have any impact on ACIAR's financial report.	1 July 2007
AASB 2007-3	Amendments to Australian Accounting Standards arising from AASB 8 [AASB 5, AASB, AASB 6, AASB 102, AASB 107, AASB 119, AASB 127, AASB 134, AASB 136, AASB 1023 & AASB 1038]	Amending standard issued as a consequence of AASB 8 *Operating Segments*.	1 January 2009	The changes are not expected to have any impact on ACIAR's financial report	1 July 2009

Table 1.4 - continued

Reference	Title	Summary	Application date of standard*	Impact on Group financial report	Application date for ACIAR*
AASB 2007-6	Amendments to Australian Accounting Standards arising from AASB 123 [AASB 1, AASB 101, AASB 107, AASB 111, AASB 116 & AASB 138 and Interpretations 1 & 12]	Amending standard issued as a consequence of revisions to AASB 123 *Borrowing Costs*.	1 January 2009	The amendments to AASB 123 require that all borrowing costs associated with a qualifying asset be capitalised. ACIAR has no borrowing costs associated with qualifying assets and as such the amendments are not expected to have any impact on ACIAR's financial report.	1 July 2009
AASB 2007-7	Amendments to Australian Accounting Standards [AASB 1, AASB 2, AASB 4, AASB 5, AASB 107 & AASB 128]	Amending standards for wording errors, discrepancies and inconsistencies.	1 July 2007	The amendments are minor and do not affect the recognition, measurement or disclosure requirements of the standards. Therefore the amendments are not expected to have any impact on ACIAR's financial report.	1 July 2007
AASB 7	*Financial Instruments: Disclosures*	New standard replacing disclosure requirements of AASB 130 *Disclosures in the Financial Statements of Banks and Similar Financial Institutions* and AASB 132 *Financial Instruments: Disclosure and Presentation*.	1 January 2007	Refer to AASB 2005-10 above.	1 July 2007
AASB 8	*Operating Segments*	New standard replacing AASB 114 *Segment Reporting*, which adopts a management approach to segment reporting.	1 January 2009	Refer to AASB 2007-3 above.	1 July 2009
AASB 123 (amended)	*Borrowing Costs*	The amendments to AASB 123 require that all borrowing costs associated with a qualifying asset must be capitalised.	1 January 2009	Refer to AASB 2007-6 above.	1 July 2009

*Designates the beginning of the applicable annual reporting period.

1.5 Revenue

Revenues from Government

Amounts appropriated for Departmental outputs appropriation for the year (adjusted for any formal additions or reductions) are recognised as revenue, except for certain amounts that relate to activities that are reciprocal in nature, in which case revenue is recognised only when it has been earned.

Appropriations receivable are recognised at their nominal amounts.

Other Revenue

Revenue from the sale of goods is recognised when:

- the risks and rewards of ownership have been transferred to the buyer
- the seller retains no managerial involvement nor effective control over the goods
- the revenue and transaction costs incurred can be reliably measured
- it is probable that the economic benefits associated with the transaction will flow to the entity.

Revenue from rendering of services is recognised by reference to the stage of completion of contracts at the reporting date. The revenue is recognised when:

- the amount of revenue, stage of completion and transaction costs incurred can be reliably measured
- the probable economic benefits with the transaction will flow to the entity.

The stage of completion of contracts at the reporting date is determined by reference to the proportion of costs incurred to date to the estimated total costs of the transaction.

Receivables for goods and services, which have 30-day terms, are recognised at the nominal amounts due, less any provision for bad and doubtful debts. Collectability of debts is reviewed at balance date. Provisions are made when collectability of the debt is no longer probable. Provision for bad and doubtful debts is currently not required based on ACIAR's experience in collecting all debts due to ACIAR.

1.6 Gains

Resources received free of charge

Services received free of charge are recognised as gains when and only when a fair value can be reliably determined and the services would have been purchased if they had not been donated. Use of those resources is recognised as an expense.

Other gains

Gains from the disposal of non-current assets are recognised when control of the asset has passed to the buyer.

1.7 Transactions with the Government as owner

Equity injections

Amounts appropriated which are designated as 'equity injections' for a year (less any formal reductions) are recognised directly in contributed equity in that year.

Restructuring of administrative arrangements

Net assets received from or relinquished to another Australian Government agency or authority under a restructuring of administrative arrangements are adjusted at their book value directly against contributed equity.

Other distributions to owners

The FMOs require that distributions to owners be debited to contributed equity unless in the nature of a dividend.

ACIAR has received no equity injections or made any distributions to owners.

1.8 Grants

ACIAR makes grant payments under the *Australian Centre for International Agricultural Research Act 1982, as amended.*

All grant agreements require the grantee to perform services or provide facilities, or to meet eligibility criteria. Liabilities are recognised only to the extent that the services required have been performed or the eligibility criteria have been satisfied by the grantee. (Where grants moneys are paid in advance of performance or eligibility, a prepayment is recognised.)

1.9 Employee benefits

Liabilities for services rendered by employees are recognised at the reporting date to the extent that they have not been settled.

Liabilities for 'short-term employee benefits' (as defined in AASB 119) and termination benefits due within twelve months of balance date are measured at their nominal amounts.

The nominal amount is calculated with regard to the rates expected to be paid on settlement of the liability.

All other employee benefits are measured at the present value of the estimated future cash outflows to be made in respect of services provided up to the reporting date.

Leave

The liability for employee benefits includes provision for annual leave and long service leave. No provision has been made for sick leave as all sick leave is non-vesting and the average sick leave taken in future years by employees of ACIAR is estimated to be less than the annual benefit for sick leave.

The liability for annual leave reflects the value of total annual leave benefits of all employees at 30 June 2007 and is recognised at its nominal amount.

All annual leave is recognised as a current liability.

The long service leave liability for 2006-07 has been calculated using a shorthand methodology. The nominal probability-weighted accrued long service leave for each employee is calculated using the following probability weightings for each band of completed years from years one to ten:

Completed years of service	Probability Weights (%)
0	0.55
1	0.65
2	0.7
3	0.75
4	0.8
5	0.85
6	0.9
7	0.9
8	0.95
9	1
10+	1

To reflect the present value of the (probability weighted) long service leave liability, a discount factor of 84.1% was applied using a 10-year government bond rate of 6.25% as at 30 June 2006 and assuming salary growth rate (SGR) of 4% over the next 10 years.

Long service leave is disclosed as current if one of the following situations occurs. The first is when the service period is 10 years and over as there is a legal right to payment, irrespective of whether payment is expected to be settled within 12 months. The second is when the employee is 55 years or older, where employee is entitled to pro-rata payment of long service leave, irrespective of whether the service period is 10 years or less.

Separation and redundancy

No provision is made for separation and redundancy payments as ACIAR has not formally identified any positions as excess to requirements in the foreseeable future.

Superannuation

Staff of ACIAR are members of the Commonwealth Superannuation Scheme (CSS), the Public Sector Superannuation Scheme (PSS) or the PSS accumulation plan (PSSap).

The CSS and PSS are defined benefit schemes of the Commonwealth. The PSSap is a defined contribution scheme.

The liability for defined benefits is recognised in the financial statements of the Australian Government and is settled by the Australian Government in due course.

ACIAR makes employer contributions to the Australian Government at rates determined by an actuary to be sufficient to meet the cost to the Government of the superannuation entitlements of ACIAR's employees.

From 1 July 2005, new employees have been eligible to join the PSSap scheme.

The liability for superannuation recognised at 30 June 2007 represents outstanding contributions for the final fortnight of the year.

1.10 Leases

A distinction is made between finance leases which effectively transfer from the lessor to the lessee substantially all the risks and benefits incidental to ownership of leased non-current assets and operating leases under which the lessor effectively retains substantially all such risks and benefits.

Where a non-current asset is acquired by means of a finance lease, the asset is capitalised at either the fair value of the lease property or, if lower, the present value of minimum lease payments at the inception of the contract and a liability is recognised at the same time and for the same amount.

The discount rate used is the interest rate implicit in the lease. Leased assets are amortised over the period of the lease. Lease payments are allocated between the principal component and the interest expense.

Operating lease payments are expensed on a straight line basis which is representative of the pattern of benefits derived from the leased assets.

1.11 Borrowing Costs

All borrowing costs are expensed as incurred.

1.12 Cash

Cash means notes and coins held and any deposits held at call with a bank or financial institution. Cash is recognised at its nominal amount.

1.13 Financial risk management

ACIAR's activities expose it to normal commercial financial risk. As a result of the nature of ACIAR's business and internal and Australian Government policies, dealing with the management of financial risk, ACIAR's exposure to market, credit, liquidity and cash flow and fair value interest rate risk is considered to be low.

1.14 Derecognition of financial assets and liabilities

Financial assets are derecognised when the contractual rights to the cash flows from the financial assets expire or the asset is transferred to another entity. In the case of a transfer to another entity, it is necessary that the risks and rewards of ownership are also transferred.

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Financial liabilities are derecognised when the obligation under the contract is discharged, cancelled or expires.

1.15 Impairment of financial assets

Financial assets are assessed for impairment at each balance date.

Financial assets held at amortised cost

If there is objective evidence that an impairment loss has been incurred for financial assets the amount of the loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows discounted at the asset's original effective interest rate. The carrying amount is reduced by way of an allowance account. The loss is recognised in the Income Statement.

Financial assets held at cost

If there is objective evidence that an impairment loss has been incurred on an unquoted equity instrument that is not carried at fair value because it cannot be reliably measured, or a derivative asset that is linked to and must be settled by delivery of such an unquoted equity instrument, the amount of the impairment loss is the difference between the carrying amount of the asset and the present value of the estimated future cash flows discounted at the current market rate for similar assets.

Available for sale financial assets

If there is objective evidence that an impairment loss on an available for sale financial asset has been incurred, the amount of the difference between its cost, less principal repayments and amortisation, and its current fair value, less any impairment loss previously recognised in expenses, is transferred from equity to the Income Statement.

1.16 Trade creditors

Supplier and other payables are recognised at their nominal amounts, being the amounts at which the liabilities will be settled. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).

1.17 Contingent liabilities and contingent assets

Contingent liabilities and assets are not recognised in the balance sheet but are reported in Schedule of Commitments and Note 13. They may arise from uncertainty as to the existence of a liability or asset, or represent an existing liability or asset in respect of which settlement is not probable or the amount cannot be reliably measured. Remote contingencies are part of this disclosure. Contingent assets are reported when settlement is probable, and contingent liabilities are recognised when settlement is greater than remote.

1.18 Acquisition of assets

Assets are recorded at cost on acquisition except as stated in Table 1.19. The cost of acquisition includes the fair value of assets transferred in exchange and liabilities undertaken. Financial assets are initially measured at their fair value plus transaction costs where appropriate.

Assets acquired at no cost, or for nominal consideration, are initially recognised as assets and revenues at their fair value at the date of acquisition, unless acquired as a consequence of restructuring of administrative arrangements. In the latter case, assets are initially recognised as contributions by owners at the amounts at which they were recognised in the transferor agency's accounts immediately prior to restructuring.

1.19 Property, plant and equipment

Asset recognition threshold

Purchases of property, plant and equipment are recognised initially at cost in the balance sheet, except for purchases costing less than $2,000, which are expensed in the year of acquisition (other than where they form part of a group of similar items which are significant in total).

Revaluations

Fair values for each class of asset are determined as shown below:

Table 1.19

Asset Class	Fair Value measured as:
Leasehold Improvements	Depreciated cost
Plant & Equipment	Market Selling Price

Following initial recognition at cost, property, plant and equipment are carried at fair value less accumulated depreciation and accumulated impairment losses. Valuations are conducted with sufficient frequency to ensure that the carrying amounts of assets do not differ materially from the assets' fair values as at the reporting date. The regularity of independent valuations depends upon the volatility of movements in market values for the relevant assets.

Revaluation adjustments are made on a class basis. Any revaluation increment is credited to equity under the heading asset revaluation reserve except where to the extent that it reverses a previous revaluation decrement of the same asset class that was previously recognised through surplus and deficit. Revaluation decrements for a class of assets are recognised directly in the Income Statement except to the extent that they reverse a previous revaluation increment for that class.

Any accumulated depreciation as at the revaluation date is eliminated against the gross carrying amount of the asset and the asset restated to the revalued amount.

Depreciation and amortisation

Depreciable property, plant and equipment assets are written-off to their estimated residual values over their estimated useful lives to ACIAR using, in all cases, the straight-line method of depreciation. Leasehold improvements are depreciated on a straight-line basis over the lesser of the estimated useful life of the improvement or the unexpired period of the lease.

Depreciation/amortisation rates (useful lives), residual values and methods are reviewed at each balance date and necessary adjustments are recognised in the current, or current and future reporting periods, as appropriate.

Depreciation rates applying to each class of depreciable asset are based on the following useful lives:

	2007	2006
Plant and equipment	**5-10 years**	5-10 years
Computer Equipment	**3 - 5 years**	3 – 5 years
Intangibles	**5-10 years**	5-10 years

The aggregate amount of depreciation and amortisation allocated for each class of asset during the reporting period is disclosed in Note 7c.

Impairment

All assets were assessed for impairment at 30 June 2007. Where indications of impairment exist, the asset's recoverable amount is estimated and an impairment adjustment is made if the asset's recoverable amount is less than its carrying amount.

The recoverable amount of an asset is the higher of its fair value less costs to sell and its value in use. Value in use is the present value of the future cash flows expected to be derived from the asset. Where the future economic benefit of an asset is not primarily dependent on the asset's ability to generate future cash flows, and the asset would be replaced if ACIAR were deprived of the asset, its value in use is taken to be its depreciated replacement cost.

No indicators of impairment were found for assets at fair value.

1.20 Intangibles

Intangibles consist of purchased proprietary software and are amortised on a straight-line basis over their useful lives, which range from 5 to 10 years.

All software assets were assessed for indications of impairment as at 30 June 2007. None were found to be impaired.

1.21 Taxation / competitive neutrality

ACIAR is exempt from all forms of taxation except fringe benefits tax and the goods and services tax (GST).

Revenues, expenses and assets are recognised net of GST:

- except where the amount of GST incurred is not recoverable from the Australian Taxation Office, and
- except for receivables and payables.

ACIAR is not required to make Australian Income Tax Equivalent payments to the Government under competitive neutrality arrangements.

1.22 Change in accounting policy

During 2006-07 ACIAR used for the first time the ACIAR Special Account, within the Official Public Account, which was established under the *Australian Centre for International Agricultural Research Act 1982*. The Special Account has been used to hold cash received from AusAID and the Australian Greenhouse Office in advance of project expenditure.

In 2005-06 the balance of cash held was reported as part of appropriation receivable. This amount totalled $3.329 million.

As at 30 June 2007 cash balance of $4.435 million is reported under cash. For further detail refer to Note 19.

Note 2: Events after the balance sheet date

As indicated in Note 1.1, changed governance arrangements take effect from 1 July 2007.

There are no foreseeable financial effects of the changed governance arrangements or other events or transactions after the reporting date which could materially affect these financial statements.

Note 3: Income

Revenue	**2007**	2006
	$'000	$'000
Note 3A: Revenue from Government		
Appropriation:		
Departmental outputs	**50,362**	49,334
Total revenue from government	**50,362**	49,334
Note 3B: Sale of goods and rendering of services		
Provision of goods - external entities	**13**	17
Total sale of goods and rendering of services	**13**	17
Note 3C: Revenue from External Sources		
AusAID contributions	**9,906**	5,437
Other government agencies	**516**	579
Total related entities	**10,422**	6,017
Project returns	**4**	169
Miscellaneous revenue	**60**	18
Total external entities	**64**	187
Total revenue from external sources	**10,486**	6,204
Note 3D: Other Revenue		
Resources received free of charge	**23**	23
Total other revenue	**23**	23
Note 3E: Sale of assets		
Infrastructure, plant and equipment		
Proceeds from sale	**331**	-
Carrying value of assets sold	**(317)**	-
Net gain from sale of assets	**14**	-

Note 4: Expenses

	2007 $'000	2006 $'000
Note 4A: Employee Benefits		
Wages and Salaries	**4,377**	4,138
Superannuation	**634**	652
Leave and other entitlements	**142**	239
Separation and redundancies	-	28
Other employee benefits	**174**	120
Total employee benefits	**5,327**	5,177
Note 4B: Suppliers		
Provision of goods - related entities	-	2
Provision of goods - external entities	**299**	271
Rendering of services - related entities	**542**	456
Rendering of services - external entities	**2,525**	2,153
Operating lease rentals*	**511**	574
Workers compensation premiums	**26**	27
Total supplier expenses	**3,903**	3,483
* These comprise minimum lease payments only.		
Note 4C: Grants		
Non-profit organisations	**34,624**	31,115
Overseas	**10,300**	9,992
Total grants	**44,924**	41,107
Note 4D: Depreciation and Amortisation		
Depreciation		
Leasehold improvements	**92**	51
Plant and equipment	**171**	219
Amortisation		
Intangibles - Computer Software	**44**	49
Total depreciation and amortisation	**307**	319
Note 4E: Write-down and impairment of assets		
Impairment of non-financial assets		
Computer equipment - impairment loss	**-**	21
Total write-down and impairment of assets	**-**	21

Note 4: Expenses – cont.

	2007 $'000	2006 $'000
Note 4F: Other Program Expenditure		
Training	**4,132**	2,909
Communications research	**657**	691
Other research	**1,593**	1,700
Total other program expenditure	**6,382**	5,300
Note 4G: Losses from asset sales		
Infrastructure, plant and equipment		
Proceeds from sale	-	94
Carrying value of assets sold	-	(106)
Total losses from asset sales	**-**	(12)

Note 5: Income tax expense (competitive neutrality)

ACIAR does not provide any services that fall with the Australian Government's Competitive Neutrality Policy and as indicated in Note 1.21, is therefore not required to make Australian Income Tax Equivalent payments to the Government.

Note 6: Financial assets

	2007 $'000	2006 $'000
Note 6A: Cash and cash equivalents		
Special Account	**4,435**	**-**
Cash on hand or on deposit	**497**	470
Total cash and cash equivalents	**4,932**	470
Note 6B: Trade and Other Receivables		
Goods and services	**85**	814
Appropriations Receivable for existing outputs	**1,585**	4,651
GST receivable from the Australian Taxation Office	**700**	596
Other Receivables	**19**	439
Total trade and other receivables	**2,389**	6,500
All receivables are with entities external to ACIAR.		
Receivables are aged as follows:		
Not overdue	**2,304**	5,686
Overdue by:		
Less than 30 days	**-**	254
30 to 60 days	**85**	560
Total trade and other receivables	**2,389**	6,500
Receivables are represented by:		
Current	**2,389**	6,500
Non-current	**-**	**-**
Total trade and other receivables	**2,389**	6,500

Note 7: Non-financial assets

Note 7A: Land and buildings	**2007 $'000**	2006 $'000
Leasehold improvements		
– fair value	**580**	546
– accumulated depreciation	**(155)**	(63)
Total leasehold improvements	**425**	483
Total land and buildings (non-current)	**425**	483

Note 7B: Infrastucture, Plant and Equipment

Plant and equipment:		
- fair value	**970**	1,026
- accumulated depreciation	**(588)**	(710)
Total plant and equipment	**382**	316
Total infrastucture, plant and equipment	**382**	316

The value reported reflects the fair value of infrastructure, plant and equipment as at 30 June 2007.

No indicators of impairment were found for non-financial assets.

Note 7C: Analysis of Infrastructure, Plant and Equipment

TABLE A - Reconciliation of the opening and closing balances of infrastructure, plant and equipment (2006-07)

ITEM	Leasehold Improvements	Plant and Equipment	Total Infrastructure, Plant & Equipment
	$'000	**$'000**	**$'000**
As at 1 July 2006			
Gross book value	546	1,026	1,572
Accumulated depreciation / amortisation	(63)	(710)	(773)
Net book value 1 July 2006	**483**	**316**	**799**
Additions:			
by purchase	34	241	275
Depreciation / amortisation expense	(92)	123	31
Disposals	-	(298)	(298)
Net book value 30 June 2007	**425**	**382**	**807**
Net book value as of 30 June 2007 represented by:			
Gross book value	580	970	1,550
Accumulated depreciation / amortisation and impairment	(155)	(588)	(743)
Net book value 30 June 2007	**425**	**382**	**807**

Note 7: Non-financial assets – cont.

TABLE A - Reconciliation of the opening and closing balances of infrastructure, plant and equipment (2005-06)

ITEM	Leasehold Improvements	Plant and Equipment	Total Infrastructure, Plant & Equipment
	$'000	$'000	$'000
As at 1 July 2005			
Gross book value	582	1,204	1,786
Accumulated depreciation / amortisation	(425)	(814)	(1,239)
Net book value 1 July 2005	**157**	**390**	**547**
Additions:			
by purchase	52	233	285
Revaluations and impairments through equity	325	(21)	304
Depreciation / amortisation expense	(51)	(219)	(270)
Disposals	-	(67)	(67)
Net book value 30 June 2006	**483**	**316**	**799**
Net book value as of 30 June 2006 represented by:			
Gross book value	546	1,026	1,572
Accumulated depreciation / amortisation and impairment	(63)	(710)	(773)
Net book value 30 June 2006	**483**	**316**	**799**

Note 7D: Intangibles	**2007**	2006
Computer software at cost	**$'000**	$'000
Purchased computer software	**580**	594
Accumulated amortisation	**(411)**	(387)
Total Intangibles (non-current)	**169**	207

Note 7: Non-financial assets – cont.

TABLE B Reconciliation of the opening and closing balances of intangibles (2006-07)

ITEM	Computer Software Purchased	Total
	$'000	$'000
As at 1 July 2006		
Gross book value	594	594
Accumulated depreciation / amortisation and impairment	(387)	(387)
Net book value 1 July 2006	**207**	**207**
Additions:		
by purchase or internally developed	6	6
Amortisation	(24)	(24)
Disposals:		
from disposal of entities or operations (including restructuring)	(20)	(20)
Net book value 30 June 2007	**169**	**169**
Net book value as of 30 June 2007 represented by:		
Gross book value	580	580
Accumulated depreciation / amortisation	(411)	(411)
Net book value 30 June 2007	169	169

TABLE B Reconciliation of the opening and closing balances of intangibles (2005-06)

ITEM	Computer Software Purchased	Total
	$'000	$'000
As at 1 July 2005		
Gross book value	536	536
Accumulated depreciation / amortisation and impairment	(338)	(338)
Net book value 1 July 2005	**198**	**198**
Additions:		
by purchase or internally developed	58	58
Amortisation	(50)	(50)
Disposals:		
from disposal of entities or operations (including restructuring)	-	-
Net book value 30 June 2007	**206**	**206**
Net book value as of 30 June 2006 represented by:		
Gross book value	594	594
Accumulated depreciation / amortisation	(387)	(387)
Net book value 30 June 2007	207	207

Note 7: Non-financial assets – cont.

Note 7E: Other non-financial assets

	2007	2006
Prepayments	**$'000**	$'000
Employees	**3**	22
Suppliers	**88**	116
Grants	**256**	261
Total other non-fnancial assets	**347**	399

All other non-financial assets are current assets.

No indicators of impairment were found for other non-financial assets.

Note 8: Payables

	2007	2006
	$'000	$'000
8A - Suppliers		
Trade creditors	**315**	571
Total supplier payables	**315**	571

Settlement is usually made net 30 days.

8B - Grants		
Non-profit organisations		
ACIAR Projects	**1,584**	1,097
Project witholdings	**236**	105
Total grants payables	**1,820**	1,202

8C - Other Payables		
Unearned Revenue	**4,211**	4,255
Research Publications	**60**	59
Other Research Activities	**128**	105
Total other program payables	**4,399**	4,419

All payables are current liabilities.

Note 9: Interest-bearing liabilities

ACIAR does not have any interest bearing liabilities.

Note 10: Provisions

	2007	2006
10A - Employee Provisions	**$'000**	$'000
Salaries and wages	**115**	142
Leave	**1,107**	1,208
Superannuation	**5**	5
Separations and redundancies	**-**	-
Other	**-**	-
Total employee provisions	**1,227**	1,355
Employee provisions are represented by:		
Current	**1,110**	1,271
Non-current	**117**	84
Total employee provisions	**1,227**	1,355

Note 11: Restructuring

ACIAR has not been part of any administrative restructuring arrangements.

Note 12: Cash flow reconciliation

	2007	2006
	$'000	$'000
Reconciliation of cash and cash equivalent per Balance Sheet to Cash Flow Statement		
Report cash and cash equivalents as per:		
Cash Flow Statement	**4,932**	470
Balance Sheet	**4,932**	470
Difference	**-**	-
Reconciliation of operating result to net cash from operating activities:		
Operating result	**55**	159
Depreciation/amortisation	**307**	319
Loss on disposal of assets	**(14)**	12
Resources received free of charge	**(23)**	(23)
(Increase)/decrease in net receivables	**4,111**	(3,912)
(Increase)/decrease in prepayments	**51**	(203)
Increase/(decrease) in employee provisions	**(128)**	(24)
Increase/(decrease) in supplier payables	**(256)**	430
Increase/(decrease) in grants and other payable	**630**	3,412
Cash used in financing and investment activities	**-**	62
Net cash from / (used by) operating activities	**4,732**	232

Note 13: Contingent liabilities and assets

There are no unquantifiable or remote contingencies.

Note 14: Executive remuneration

The number of senior executives who received or were due to receive total remuneration of $130,000 or more:

	2007	2006
$205,000 - $219,999	**-**	1
$220,000 - $234,999	**-**	-
$235,000 - $249,999	**1**	-
$250,000 - $264,999	**-**	1
$265,000 - $289,999	**1**	-
	2	2

The aggregate amount of total remuneration of executives shown above.	**$518,421**	**$467,477**
The aggregate amount of separation and redundancy/termination benefit payments during the year to executives shown above.	**-**	-

The executive remuneration includes all officers concerned with or taking part in the management of the economic entity during 2006-07 including the Director.

Note 15: Remuneration of auditors

	2007	2006
Financial statement audit services are provided free of charge to ACIAR.	**$'000**	$'000
The fair value of the services provided was:	**23**	23

No other services were provided by the Auditor-General.

Note 16: Average staffing levels

The average staffing levels for ACIAR in 2006-07 were 48 (FTE 43.84) (2005-06 were 48 (FTE 44.44)).

A number of contract and locally engaged staff are engaged in Australian overseas missions. In 2006-07 the number was 21 (FTE 20.5) (2005-06: 21 (20.5 FTE)).

Note 17: Financial instruments

Note 17A - Interest Rate Risk

Financial Instrument	Note	Non-Interest Bearing		Total		Weighted Average Effective Interest Rate	
		2007	2006	**2007**	2006	**2007**	2006
		$'000	$,000	**$'000**	$,000	**%**	%
Financial Assets							
Cash at bank	6A	**497**	470	**497**	470	**n/a**	n/a
Special Account	6A	**4,435**	3,329	**4,435**	3,329	**n/a**	n/a
Receivables for goods and services	6B	**104**	1,253	**104**	1,253	**n/a**	n/a
Total		**5,036**	5,052	**5,036**	5,052	**n/a**	n/a
Total Assets				**8,644**	8,375		
Financial Liabilities							
Suppliers	8A	**315**	571	**315**	571	**n/a**	n/a
Grants	8B	**1,820**	1,202	**1,820**	1,202	**n/a**	n/a
Other program expenditure	8C	**188**	164	**188**	164	**n/a**	n/a
Total		**2,323**	1,937	**2,323**	1,937	**n/a**	n/a
Total Liabilities				**7,761**	7,547		

Note 17B - Net Fair Values of Financial Assets and Liabilites

The net fair values of each class of financial assets and liabilities equals the carrying amounts in both 2006 and 2007. Values are shown in the Balance Sheet.

Note 17C - Credit Risk Exposures

The entity's maximum exposures to credit risk at reporting date in relation to each class of recognised financial assets is the carrying amount of those assets as indicated in the Balance Sheet.

The entity has no significant exposures to any concentrations of credit risk.

Note 18: Appropriation

Note 18A - Acquittal of Authority to Draw Cash from the Consolidated Revenue Fund (CRF) for Ordinary Annual Services Appropriations

Particulars	Departmental Outputs	
	2007	2006
	$'000	$'000
Balance carried from previous period	**1,792**	2,820
Appropriation Act (No.1)	**50,362**	49,334
FMA Act:		
Appropriations to take account of recoverable GST (FMAA s30A)	**3,397**	3,304
Annotations to net Appropriations (FMA s31)	**-**	
Total Appropriations available for payments	**55,551**	55,458
Cash payments made during the year (GST inclusive)	**53,469**	53,666
Balance of Authority to Draw Cash from the CRF for Ordinary Annual Services Appropriations	**2,082**	1,792
Represented by:		
Cash at bank and on hand	**497**	470
Departmental appropriations receivable	**1,585**	1,322
Total	**2,082**	1,792

Note 19: Special accounts

Australian Centre for International Agricultural Research	Departmental Outputs	
	2007	2006
	$'000	$'000
Legal authority: Financial Management and Accountability Act, 1997; s21 *Appropriation: Financial Management and Accountability Act 1997; s21*		
Purpose: for crediting amounts received from time to time by the Centre to cover the discharge of costs, expenses and other obligations		
This account is non-interest bearing		
Balance carried from previous period	**3,329**	580
Appropriation credited to Special Account	**13,875**	7,810
Available for payments	**17,204**	8,391
Payments made to suppliers	**(12,769)**	(5,062)
Balance carried to next period	**4,435**	3,329
Represented by:		
Cash - held by ACIAR	-	-
Cash- transferred to the Official Public Account	**4,435**	3,329
Total balance carried to the next period	**4,435**	3,329

During 2006-07 ACIAR used for the first time the ACIAR Special Account, within the Official Public Account, which was established under the ACIAR Act 1982. The Special Account has been used to hold cash received from AusAID and the Australian Greenhouse Office in advance of project expenditure.

Advice was received from the Department of Finance and Administration that this was the proper use of the Account and that this approach avoided exceeding our working cash limit in our operational bank account.

ACIAR has maintained detailed records of all transactions in our FMIS and reconciled the Account at 30 June 2007.

Note 20: Assets held in trust

There are no assets held in trust at year-end.

Note 21: Reporting by outcome

21A - Net Cost of Outcome Delivery

	Outcome 1	
	2007 $'000	2006 $'000
Departmental expenses	**60,843**	55,419
Total expenses	**60,843**	55,419
Cost recovered from provision of goods and services to the non-government sector		
Total cost recovered	**13**	17
Other external revenues		
Departmental revenues		
Revenue from disposal of assets	**14**	1
Other	**87**	187
Goods and Services Revenue from Related Entities	**10,422**	6,017
Total other external revenues	**10,523**	6,204
Net cost/(contribution) of outcome	**50,306**	49,197

Note 21: Reporting by outcomes – cont.

Note 21B - Major Classes of Departmental Revenues and Expenses by Output Group

Outcome 1	Output 1.1		Output 1.2		Total	
	2007 $'000	2006 $'000	**2007 $'000**	2006 $'000	**2007 $'000**	2006 $'000
Departmental expenses						
Employees	**5,206**	5,050	**121**	127	**5,327**	5,177
Suppliers	**3,815**	3,397	**88**	86	**3,903**	3,483
Depreciation & Amortisation	**300**	311	**7**	8	**307**	319
Grants	**41,802**	41,107	**3,122**	-	**44,924**	41,107
Other Program Expenditure	**5,372**	2,391	**1,010**	2,909	**6,382**	5,300
Other	-	33	-	-	-	33
Total departmental expenses	**56,495**	52,289	**4,348**	3,130	**60,843**	55,419
Funded By:						
Revenues from government	**47,098**	46,648	**3,264**	2,686	**50,362**	49,334
Sale of goods and services	**27**	17	-	-	**27**	17
Other non-taxation revenue	**9,499**	6,227	**1,010**	-	**10,509**	6,227
Total departmental revenues	**56,624**	52,892	**4,274**	2,686	**60,898**	55,578

Outcome 1 is described in Note 1.1. Net costs shown include intra-government costs that are eliminated in calculating the actual Budget Outcome.

This is the end of the audited financial statements

Tracking performance

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

Mission

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

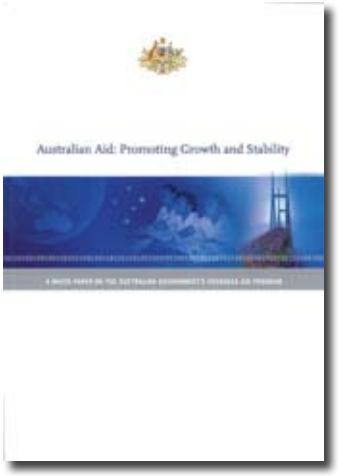
Outcome

Agriculture in developing countries and Australia is more productive and sustainable as a result of better technologies, practices, policies and systems

Aid White Paper—ACIAR's annual performance

Background

In April 2006 the White Paper on the Australian Government's Aid Program: *Promoting Growth and Stability* was released. The paper sets out a plan for Australia's overseas aid program over the next ten years. The program will be focused on the fundamental and interrelated pillars of economic growth, sound governance and stability.



As an integral part of the aid program, ACIAR has identifed and responded to the White Paper provisions of relevance to ACIAR's strategic directions and program poperations.

The White Paper is organised around four themes:

- Accelerating economic growth
- Fostering functioning and effective states
- Investing in people
- Promoting regional stability and cooperation

In monitoring ACIAR's contributions to these themes, we have disaggregated the strategic themes into component initiatives, to demonstrate actions that ACIAR is undertaking to implement White Paper directions.

Under the four themes, ACIAR's role is primarily geared towards theme 1 (economic growth), and theme 3 (investing in people). Fostering rural development and agricultural productivity is a driver to increase incomes, stimulate development of the non-farm economy and generate employment opportunities in rural areas. Similarly both formal education and informal capacity building is central to investment in human capital as a cornerstone of development. Agricultural research and development is a direct contributor in both instances. Addressing environmental challenges to enable growth to be sustained also critically underpins ACIAR's programs. Other White Paper issues which are addressed include performance effectiveness and evaluations; gender equality; the use of untied aid; use of commercial partnerships; promoting trade; and enhancing the policy environment.

Apart from specific funding targets and directions nominated in the ACIAR prioritisation processes, impact assessment and evaluation studies are instrumental in the measurement and communication of ACIAR performance, including against White Paper objectives. Working linkages have been established with the Office of Development Effectiveness to ensure full involvement of the agricultural research and development outlays in addressing wider aid program directions. The following table summarises some ACIAR achievements in 2006–07 relevant to the White Paper themes.

Theme: Accelerating Economic Growth

Subject / Initiative	Relevance to ACIAR	Performance indicators (or measurement)	Achievements 2006-07
1. Promoting Trade	Research on trade analysis, trade policy and trade facilitation, including quarantine controls and surveillance are an increasing priority for ACIAR partnerships.	• Investment in jointly agreed projects. • Adoption of results by policy makers, relevant agencies and agribusiness.	• A focus on pest and disease monitoring and management was progressed through 49 active projects during 2006–07. • Five trade policy research projects managed during the year in partnership with Asia-Pacific government and research agencies closely linked to decision makers.
2. Drivers of Growth (sustaining growth)	Agriculture, Fisheries and Forestry sectors significant sources of economic growth and employment. Productivity enhancement through R&D and knowledge transfer.	• Evidence of productivity enhancing research outcomes from R&D projects. • Identification of performance incentives for agricultural producers, including land tenure issues.	• Six independent, external impact assessments of 11 projects completed which are expected to generate net benefits of $483 million in present value terms with benefit cost ratios up to 100:1, and internal rates of return of 25–30% • Government of Pakistan launched a 5-year, $11 million "National Permanent Raised Beds" program in July 2006, aimed at establishing 1000 farmer cluster groups and providing them with machinery to implement technology developed by ACIAR that showing that Permanent Raised Beds can raise productivity of maize and wheat by 10-30%. • Widespread adoption of new fruit fly management technology by stone fruit growers in northern Vietnam and tropical fruit grower in southern Vietnam. • Widespread adoption of a improved, more profitable new tomato variety in Cambodia from ACIAR research.

Subject / Initiative	Relevance to ACIAR	Performance indicators (or measurement)	Achievements 2006-07
3. Rural and Business Development	Through chain and value-added processes, with closer market linkages for smallholders increasingly included in ACIAR portfolio as essential components of competitiveness.	• Expenditure on off-farm marketing and value-adding opportunities for smallholders triggered by adoption of the results of ACIAR-funded R&D projects. • Demonstrated uptake levels.	• Through chain evaluating opportunities have been assessed in several countries and industries, with more than nine assessments occurring in Indonesia. These assessments have identified strategies and projects that will deliver closer market linkages for the small holder, primarily to improve industry competitiveness. • Initiatives on value addition to timber products commenced or underway in PNG, Vanuatu, Vietnam, and China. • Improved trade in mangoes has been generated in the Philippines, Thailand and Australia from adoption of heat treatment systems to achieve quarantine requirements in Japan and other countries. Over $20 million of net welfare gains have been achieved (IAS Report No 50). • Low-cost "de-sapping" system has been developed for mangoes exported from Pakistan and rapidly adopted by exporters. This is resulting in treated fruit achieving a 50 cent per kg premium.
4. Emergency Management	Disaster relief generally requires research into agricultural restoration options and pathways. Flexible/quick response needed.	• Flexible and quick response on timely basis where agricultural and fisheries technical inputs identified as important. • Working partnerships with Australian agencies and international donors developed in a timely fashion.	• Information from fisheries and soil management projects developed in response to the December 2004 tsunami disaster utilised by other users, including Indonesian government, NGOs and donors such as USAID, JICA and FAO. • Program of agricultural and fisheries rehabilitation implemented in post-conflict Solomon Islands. • Close partnerships with AusAID, FAO and national governments established to deliver results.

Subject / Initiative	Relevance to ACIAR	Performance indicators (or measurement)	Achievements 2006-07
5. Regional Integration	Projects in selected areas such as management of transboundary plant and animal diseases where a regional approach is necessary and desirable.	• Appropriate use of regional mechanisms in selected areas such as management of transboundary diseases and trade policy and market access measures where warranted.	• Regional research cooperation with Indonesia on management of transboundary fish stocks progressed through two projects on sharks/rays and deep swimming tunas. • ACIAR and other donors supporting a major regional tuna tagging project examining the impact and reported high harvest rates of juvenile fish in PNG on wider regional stocks. • Regional approach and consortia on trans-boundary management of livestock diseases established in Mekong region. • Regional initiative underway on the management of yellow rust in wheat.
6. Country Strategies	ACIAR programs and priorities designed in consultation with partners to establish mutual priorities, in the context of a broader single whole-of-government development assistance program for each country.	• Demonstrated compatibility of ACIAR country strategies with whole-of-government country development and AusAID rural development strategies.	• ACIAR country strategies coordinated and cleared with DFAT and AusAID for incorporation in 2007–08 Annual Operational Plan. • ACIAR involvement in development of new Australian aid program strategies for the Philippines, Mekong region, Vietnam, Indonesia and East Timor. • Contribution by ACIAR to AusAID development research strategy and aid program environment strategies.
7. Working with Partners	Close interaction with partner countries and stakeholders is essential for effective research application and implementation across ACIAR.	• Overseas stakeholder survey completed in 2006-07 together with an Action Plan developed to further improve partnerships in Asia-Pacific region in response to survey results.	• Overseas stakeholder survey completed and report provided to ACIAR Board of Management. Survey positive on ACIAR's role in fostering partnerships for research for development and in developing human capital. • Management response plan drafted for consideration by new ACIAR Commission, proposing initiatives designed to further improve partnerships.

Subject / Initiative	Relevance to ACIAR	Performance indicators (or measurement)	Achievements 2006-07
8. Greater private sector participation in ACIAR research	Private sector partnerships to achieve research results as well as effective dissemination and adoption are selectively undertaken.	• Private sector partnership strategy developed by management and staff and endorsed by Board of Management • New private sector initiatives developed in keeping with aid program strategy and policy.	• Private sector discussion paper drafted for later consideration as a strategy paper once the new Commission is established. • Significant involvement of private sector in ACIARs program, including in over 20 projects in 12 countries. Using PNG projects as an example, private sector partners range from industry associations in PNG (such as the Oil Palm Research Association) and Australia (Plywood Association of Australia), to individual PNG-based companies (such as Trukai Farms and Ramu Sugar), and Australian companies (e.g. Botanical Resources Australia).
9. Environmental sustainability	Better environments from better (and sustainable) agriculture is a key thematic area for ACIAR. Improved technologies, practices, policies and systems can make a strong environmentally beneficial contribution.	• Funding levels for research on environmental impacts of agriculture, land use and institutional capabilities.	• Aggregate funding on projects addressing soil loss, salinity and acidity increased by 12% over previous year. • Eighty four projects related directly or indirectly to environmental sustainability in partner countries and Australia being managed in 2006–07. • During 2006–07, 20 new projects were initiated on topics directly related to environmental sustainability. • Completed design and initiated the implementation of a $6 million integrated cluster of projects targeting increased water productivity in India ranging from farm level interventions to policy and institutional advice.

Theme: Investing in People

Subject / Initiative	Relevance to ACIAR	Performance indicators (or measurement)	Achievements 2006-07
1. Gender equality	In many partner countries women (and children) make an essential contribution to agricultural production and marketing, and financial management of smallholder enterprises. Female role in identifying priorities and ensuring research and adoption approaches in projects are identified.	• Where feasible the number of women participants in ACIAR programs will be numerated. • Female participation in ACIAR training, education and extension activities will be recorded and assessed for reporting purposes.	• International training course completed for selected ACIAR R&D/extension providers on 'gender mainstreaming'. • Seven ACIAR John Dillon Fellowships awarded to developing country research managers, including two women. • Fifty two John Allwright Postgraduate Fellowships commenced, with 16 female awardees. • Several new and existing projects specifically focus on improving gender equality in farming, including research on more equitable distribution of income from oil palm and cocoa production (PNG); improvements to farming practices for women rice farmers (Philippines, Vietnam and Thailand); establishment of extension practices informing and involving women in arid watersheds (India); enhancing market returns to women producers of indigenous vegetables (Vietnam); whole of family (i.e. explicitly inclusive of women) approaches to improving productivity of cropping systems (Bangladesh).
2. Education access and scholarships	Building capacity of agricultural research institutes in partner countries is a key ACIAR priority. ACIAR also offers several specialised training activities, e.g. John Allwright Fellowships; John Dillon Fellowships and short term training courses.	• Continued high quality of applications for research management training in Australia with at least five management fellowships awarded each year. • Size of (John Allwright) postgraduate program increased by at least 25%.	• In 2006–07 ACIAR training program expenditure increased to over $4 million compared to $2.9 million in 2005–06. • Expenditure on the John Allwright Postgraduate Fellowship program was $2.6 million with 96 active fellowships during the year compared with $1.5 million and 57 active fellowships in 2005–06.

Subject / Initiative	Relevance to ACIAR	Performance indicators (or measurement)	Achievements 2006-07
3. Informal capacity building	A wide range of ACIAR projects incorporate informal or on the job capacity enhancement elements. This is necessary to receive good adoption levels. The 'participatory research and extension' system approach is used by ACIAR.	• Inclusion of capacity building provisions in all relevant projects. • Examine improved measurement and evaluation of capacity building impacts. • Investment in suitable extension research and adoption projects.	• All new ACIAR research projects assessed during the In House Review process for capacity building potential in conjunction with other impacts. • Study on approaches to improve the efficiency of technology assessment and extension in eastern Indonesia completed. • A specific extension needs research project covering a number of Pacific Island countries progressed during the year. • The benefits from capacity building were estimated for sorghum breeding research in India and shown to have very high returns of $161 million. (see IAS Report No 48).
4. Delivering better human health (especially women and children)	ACIAR's project portfolio includes food and nutritional security objectives including development of improved crop and animal products. Zoonotic disease management also are an important feature in the research agenda.	• Closer targeting of crop/animal quality improvement with breeding and distribution achievements to raise nutritional levels (and therefore health). • Adoption of zoonotic disease remedies at farm and policy levels. • Reduced disease control costs.	• ACIAR animal health (including zoonotic diseases and infections) program externally appraised and forward action plan approved to cover increased emphasis on zoonotic disease management and transboundary disease control including institutional, regulatory and policy interventions • Major report on food safety issues and constraints in Indonesia completed. • ACIAR-supported project on screening and field trials of high-carotenoid sweet potatoes in Solomon Islands and PNG to improve human vitamin A status identified some high vitamin A varieties. • Vegetable production projects in Indonesia, PNG and the Solomon Islands have identified pesticide use and management issues and has developed and disseminated information on pesticide use and safer chemicals.

Subject / Initiative	Relevance to ACIAR	Performance indicators (or measurement)	Achievements 2006-07
5. Strengthening cooperation on transboundary threats	Collaborative research on agricultural pests and transboundary diseases can help address these increasingly significant challenges for Australia and its regional counterparts.	• Funding of projects relevant to transboundary disease monitoring, surveillance and control mechanisms and associated development of cooperation in quarantine and biosecurity capacity.	• MOU signed with Thai Agriculture Research and Development Agency to improve cooperation in neighbouring Mekong region countries. • Five new projects commenced that address scientific and institutional requirements relevant to invasive pests and diseases. • Examples of other pest and disease related R&D projects being progressed include work on sugar cane diseases (PNG); rice fungal diseases (Cambodia), mango pests and diseases (Philippines), vegetable pests and diseases (Pacific Islands), chilli diseases (Indonesia), cocoa pests and diseases (PNG), banana wilt diseases (Indonesia and PNG), taro pests and diseases (Pacific Islands), fruit flies (PNG, Vietnam and Indonesia), potato late blight (PNG), citrus greening disease (Vietnam, Indonesia). The impact of bee mite research on quarantine and biosecurity in Australia and partner countries was estimated and shown to have benefits of $68 million. (IAS Report No 46).
6. Lessons learned/ evaluation	ACIAR already has a significant investment in impact evaluation. Demonstrating the impact and effectiveness of development assistance is a challenge for most aid donors.	• Review the methodologies used by ACIAR evaluations. • Develop linkages with the new Office of Development Effectiveness. • Greater involvement of partner country and CGIAR centre agriculturalists and economists in impact evaluation activities.	• Discussions held with Office of Development Effectiveness and individual AusAID country programs to address mutual evaluation methods and reporting. • ACIAR Policy Linkages and Impact Assessment program has established working partnership with groups in the Philippines and Vietnam. • A new working draft 'ACIAR Impact Assessment: Guidelines for practitioners' was produced and will be used in all 2007–08 assessments. • Adoption studies undertaken for seven projects completed in 2002–03. Report published.

Subject / Initiative	Relevance to ACIAR	Performance indicators (or measurement)	Achievements 2006-07
7. Untied aid policies	While ACIAR works in collaboration with other non-Australian recipient and donor country organisations, only limited project funding is provided to other countries.	• Evidence that relevant third country researchers and consultants accessed to develop an expanded pool of expertise. • This will commence in the Pacific area, including New Zealand, with initial attention to project review activities in ACIAR.	• World-wide recruitment processes completed for senior in-country positions in Indonesian program. Local scientists and consultants have been employed as the in-country project managers for two major projects in the Solomon Islands. • Over twenty major ACIAR research projects commissioned to (led by) non-Australian organisations. • Consultants database for project reviewers and consultants contains entries from over 15 countries. • Trainers from Philippines, Thailand and Africa used to deliver short-course training to ACIAR project staff. • External reviewers for end of project reviews in several programs sourced internationally.

Tracking performance against the 2006–07 Portfolio Budget Statement

Output	Indicator	Performance 2006–07
	Quality	
1.1 Collaborative research that addresses agricultural and natural resource management problems of developing countries and Australia	Regional investment profile is consistent with Australian Government aid priorities.	Expenditure for research and development projects in the South-East Asia region (particularly Indonesia, Vietnam, Philippines and Cambodia) was increased by $1.6 million in 2006–07 to support continued expansion of programs in these countries. Programs on horticulture and linkage of policy to biophysical research were initiated. There was a continued reduction in bilateral expenditure in China and India, with a corresponding increase in co-funding arrangements by partner organisations in both countries. ACIAR continued its involvement in the Australia–Indonesia Partnership for Reconstruction and Development; in particular, designing and delivering components of the Smallholder Agribusiness Development Initiative and Aceh Aquaculture Rehabilitation Scheme. ACIAR implemented, with AusAID funding, a large multi-year project (Seeds of Life 2) in East Timor to deliver improved varieties of staple food crops. ACIAR managed two of the four components of the Australia–Pakistan Agriculture Linkages Program.
	Research partners contribute 40–55% of project costs. More than 90% of concluding projects are assessed by external reviews as having achieved their main objectives.	Project partners contributed 39.8% of project cost * In 2006–07, 30 external project reviews were conducted with the recommendations considered by ACIAR Management and Board of Management. Ninety-three percent achieved their main objectives with 12 of these achieving all their objectives. ** Note: Leverage statistics include all new projects entered into in 2006–07, including small R&D activities totalling $4.3 million which are solely funded by ACIAR.*
	There is further substantiated evidence of significant economic, social and environmental impacts from completed ACIAR projects.	Seven impact assessments were published in 2006–07 with a total expected return on investment of $483.4 million (Net Present Value). A study of adoption undertaken from seven projects completed in 2002–03 revealed significant uptake of new technologies in all seven of those projects, with new technologies adopted from five of the projects and policy models or support tools adopted from two of these projects.

Output	Indicator	Performance 2006–07
	Quality	
	Support for multilateral research providers is concentrated on those International Agricultural Research Centres with greatest comparative advantage.	Twenty percent of ACIAR's total appropriation in 2006–07 was allocated to the IARCs. Of this total IARC investment, 54.6% was allocated as unrestricted funding to centres with a comparative advantage in the Asia–Pacific region while another 44.4% was allocated to specific projects within the region. The remaining 1% was allocated to other multilateral activities. These percentages are consistent with the 3-year IARC funding strategy announced at the beginning of 2005–06.
	Quantity:	
	Around 200 projects are delivering outputs during 2006–07.	ACIAR had 321 active projects during 2006–07*: 291 bilateral and 30 multilateral projects. **Note: In 2005–06 ACIAR introduced a new project category of Small Research Activities, aimed at utilising scoping studies to rapidly but more completely identify key researchable issues ahead of implementation of major projects.*
	More than 10,000 copies of ACIAR research publications and papers are requested or downloaded.	ACIAR distributed 13,747 hard copies of publications and, each month, the ACIAR publication lists featured in the top ten most visited pages on the ACIAR website, with an average each month of 25% of visitors downloading publications.
1.2 Trained researchers in developing countries and Australia	***Quality*:**	
	More than 90% of trainees will indicate satisfaction with training.	Ninety-three percent of training course participants rated the courses as satisfactory or greater, with over 81.5% rating them highly satisfactory (or very good).
	Quantity:	
	More than 100 trainees are in formal, ACIAR-supported training courses.	ACIAR held 12 cross-program training courses in six countries along with four Crawford Fund Master Classes in three countries. ACIAR had 96 active John Allwright Fellows undertaking postgraduate study in Australia representing 18 countries. Seven John Dillon Fellowships were awarded for research management training.

Tracking performance against the 2006–07 Annual Operational Plan

ACIAR's 2006–07 research priorities were set out in its Annual Operational Plan (AOP). The AOP provides a transparent window into ACIAR's operations and research directions within the context and strategies of the White Paper *Australian Aid: Promoting Growth and Stability* and the Portfolio Budget Statement.

Key performance indicators in each country

ACIAR measures it progress in each country through key performance indicators (KPIs). These assist in the development of more focused programs in each country and also reflect the drive to refine and target programs more strongly to deliver research applicable to partner-country needs. Progress against country-specific KPIs is listed in the Regional achievements section, at the beginning of each country report.

Key performance indicators other core areas of operation

AOP KPIs are included for the multilateral, communicating research results, measuring research impacts and building research capacity programs within the relevant chapters in the Year in Review section.

Key performance indicators portfolio management

Key performance indicators	Performance 2006–07
• Running costs do not increase in real terms.	• Running costs increased in real terms by 2%. During 2006–07 total running costs were $9.5 million compared to our annual budget of $9.3 million.
• All legislative and reporting requirements and requests for policy advice and information are met in an efficient and timely manner.	• ACIAR's Annual Report was tabled on 30 October 2006. ACIAR contributions/reports on National Research Priorities, Portfolio Budget Statements, Privacy Commissioner and other government agencies were all provided on time.
• Our operations are (more) streamlined, flexible and efficient.	• There was greater flexibility in In-House Review and project approval procedures through greater use of small groups and delegation of more approvals. New 'Small R&D Activity' modality was used to enable a rapid response to requests from partner countries or to scope out emerging issues. Processes were introduced to improve communication and joint planning between country offices and research programs.
• A new records-management system is implemented.	• ACIAR has successfully implemented a new records management system: Meridio. Extensive training in the use of the system, together with defining records, has been undertaken.
• Our corporate knowledge and information is readily accessible to all staff.	• ACIAR's Project Information System was enhanced and upgraded. ACIAR's Portal is now the main information source for a range of corporate documents, including the policies, key reporting and planning documentation, forms and information sheets.

Portfolio Management*

AOP budgeted expenditure in 2006–07	$3,521,136
Actual expenditure in 2006–07	$3,451,000
Proportion of total ACIAR expenditure 2006–07	5.9%

** Includes Executive Planning, Board of Management, Policy Advisory Council, Policy Secretariat, Information Management and Services, Information Technology, Infrastructure, Finance, Human Resources and International Support*

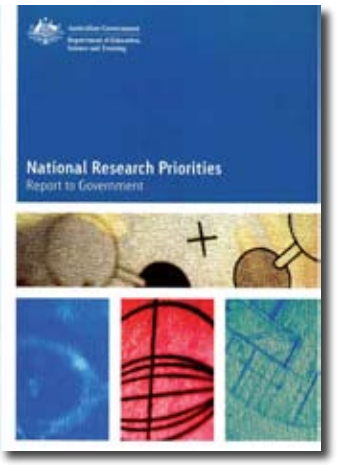
Tracking against Australia's National Research Priorities

Key performance Indicators	Performance 2006–07
Increased share of resources devoted to Priority Themes 1 and 4.	Funding of research projects relevant to Priority Themes 1 and 4 were increased in expenditure terms from $20.28 million to $20.31 million but declined from 58% of total projects funding in 2005–06 to a level of 53% in 2006–07.
Increased evidence of co-funding of projects in national research priority areas.	Co-funding by collaborators in projects in Priority Themes 1 and 4 was $18.84 million in 2005–06 and $17.22 million in 2006–07.

ACIAR's research funding priorities are driven strongly by Australia's overseas aid agenda and by country strategies that accommodate the development needs of partner countries in all regions. ACIAR also operates within the strategic aid framework recently confirmed by the White Paper on Australia's overseas aid program with a renewed emphasis on accelerating economic growth and investing in people.

The Centre has been increasingly successful over recent years in securing the mutual agreement of many of our key overseas research partners to the inclusion of NRP relevant priorities in the mutually agreed country strategies and research directions. This mutual agreement is necessary to secure adoption of research outputs in partner countries and simultaneous benefits for Australia, including in the context of NRPs. There has been a slight correction this year in the relative expenditure levels under NRP although actual expenditure has increased slightly.

This achievement is partially a reflection of the fact that many countries with which ACIAR engages in research partnerships experience similar environmental and biosecurity challenges as Australia. These can range from water and soil management issues to pest and disease incursions and controls. ACIAR has therefore focused heavily on Themes 1 (An Environmentally Sustainable Australia) and 4 (Safeguarding Australia) for the purposes of current reporting.



Nevertheless, ACIAR does undertake an increasing number of activities which could be categorised under NRP Theme 2 (Promoting and Maintaining Good Health) and Theme 3 (Frontier Technologies for Building and Transforming Australian Industries). Greater attention was given to human health issues reflecting ACIAR's increasing focus on improved nutrition and research on zoonotic disease controls, both of which are directly and indirectly addressed in a range of ACIAR projects. Under Frontier Technologies, ACIAR focused more on support of lower risk, more mature science which is assessed as more likely to deliver benefits to developing countries, including economic, social and environmental impacts as well as capacity building in partner countries. Appropriate Technologies rather than only Frontier Technologies were considered. If all NRP Themes are considered together ACIAR's total relevant expenditure rose from $23.34 million in 2005–06 to $23.91 million in 2006–07. In overall terms ACIAR expenditures under

Theme 1—An Environmentally Sustainable Australia—changed from $11.28 million in 2005–06 to $10.76 million in 2006–07. For Theme 4—Safeguarding Australia—there was a slight increase from $9 million to $9.55 million over the same time period. Total outlays on NRP-relevant projects in 2006–07 were $20.31 million, representing a small increase on the previous year. This follows several years of continuous increases in outlays on NRP relevant projects.

An Environmentally Sustainable Australia

In 2006–07 ACIAR's research investment portfolio continued to provide for a strong emphasis on agriculture, fisheries and forestry research to achieve sustainable development and national resource management in developing countries. This is directly in line with both the NRPs and Australia's overseas aid and development policies. Such projects provide benefits to both the developing countries and, in many cases, to Australia. Australian environmental benefits range from water and soil degradation management to biodiversity and climate change responses.

Safeguarding Australia

The main emphasis under this theme focused on identification, surveillance and control of invasive pests and diseases which are increasingly both a bilateral and multilateral priority in the region. A number of developing countries in the Asia–Pacific region are giving greater recognition to the importance of food safety, animal and crop health and biosecurity measures as a means of realising their agricultural potential in domestic and export markets. These priorities concur with and contribute to Australia's need to maintain and enhance its agricultural and food health and safety status.

Performance indicator 1: ACIAR investments in National Research Priorities (Themes 1 and 4)

	2005–06 actual ($m)	2006–07 actual ($m)
1. An environmentally sustainable Australia		
1.1 Water: a critical resource	3.60	3.14
1.2 Transforming existing industries	1.61	1.94
1.3 Overcoming soil loss, salinity and acidity	3.00	3.36
1.4 Reducing and capturing emissions	0.57	0.34
1.5 Sustainable use of Australia's biodiversity	2.15	1.63
1.7 Responding to climate change and biodiversity	0.36	0.35
Total Theme 1	**11.28**	**10.76**
4. Safeguarding Australia		
4.1 Critical infrastructure	0.00	0.52
4.2 Understanding our region of the world	1.50	1.23
4.3 Protecting Australia from invasive diseases and pests	7.50	7.80
Total Theme 4	**9.00**	**9.55**
TOTALS 1 AND 4	**20.28**	**20.31**
TOTAL as percentage of total ACIAR research project funding	**58%**	**53%**

Performance indicator 2: Co-funding by collaborative organisations in projects relevant to the National Research Priorities (Themes 1 and 4)

	2005-06 actual ($m)	2006-07 actual ($m)
1. An environmentally sustainable Australia		
1.1 Water: a critical resource	3.78	2.65
1.2 Transforming existing industries	0.94	1.10
1.3 Overcoming soil loss, salinity and acidity	2.05	4.08
1.4 Reducing and capturing emissions	1.05	0.88
1.5 Sustainable use of Australia's biodiversity	2.41	1.42
1.7 Responding to climate change and biodiversity	0.24	0.24
Total Theme 1	**10.47**	**10.38**
4. Safeguarding Australia		
4.1 Critical infrastructure	0.00	0.00
4.2 Understanding our region of the world	0.97	1.12
4.3 Protecting Australia from invasive diseases and pests	7.4	5.72
Total Theme 4	**8.37**	**6.84**
TOTALS 1 AND 4	**18.84**	**17.22**

The previous tables demonstrate a small increase in allocations in 2006–07 for projects within the NRP focus themes. The expenditure increase, however, is not reflected as an increase in the percentages of total research project funding. This is due primarily to an increase in special allocations to ACIAR to meet specific aid projects outside the NRP framework in terms of Themes 1 and 4. The cash and in-kind contributions by partners and collaborative organisations have declined slightly after increases in previous years. This is, however, expected to resume a growth path when new projects are initiated in the current financial year.

The Centre has continued to interact in the application of NRPs with a range of Australian research partners including cooperative research centres, rural research and development corporations, universities and state departments of agriculture.

Australian Research Benefits

An independent study based on assessments covering 35 projects since 1998 was published by ACIAR in September 2006. This review calculated the benefits to Australia (excluding benefits to recipient partner countries), which amounted to $748 million from an investment of $60 million on the abovementioned 35 projects in present value terms. It is estimated that 46% of the benefits were derived from direct production benefits a sizeable amount of which are relevant to NRP Theme 4. This measurement is not restricted to NRP-related projects, but does provide an indication of research returns to Australia which could be higher in the more recent NRP context, especially if other likely qualitative benefits are considered. Such benefits would include for example, Australian scientific capacity building, trade benefits related to science and access to international expertise and environmental gains relevant to Australian NRPs. A selected list of active projects in 2006–07 with Australian benefits directly relevant to Australia's National Research Priorities is provided below.

Projects in 2006–07 with Australian benefits directly relevant to Australia's National Research Priorities

Theme 1: an environmentally sustainable Australia

Priority Goals	ACIAR projects	Key Australian project title/outputs
1.1 Water: a critical resource	CIM/1996/025	Physiological and genetic approaches for the development of waterlogging tolerance in wheat on sodic/alkaline and neutral soils in India and Australia
	CIM/2003/030	Improving understanding and management of rice pathogens in Cambodia
	FIS/2002/001	Developing aquaculture in degraded land areas in India and Australia
	HORT/2003/045	Improvement of vegetable production and postharvest management systems in Cambodia and Australia
	LWR/2000/089	Permanent beds for irrigated rice–wheat and alternative cropping systems in north-west India and south-east Australia
	LWR/2001/014	Improving water resource management in India's agriculture: search for effective institutional arrangements and policy frameworks.
	LWR/2002/018	Regional impacts of re-vegetation on water resources of the Loess Plateau, China and the Middle and Upper Murrumbidgee Catchment, Australia
	LWR/2004/035	Technology for direct drilling into rice and other heavy stubbles in Pakistan and Australia
	PLIA/2005/152	Australia–China linkage for improved rice cold tolerance
	SMCN/2003/035	Improving the utilisation of water and soil resources for tree crop production in coastal areas of Vietnam and New South Wales
	SMCN/2004/069	Minimising agricultural pollution to enhance water quality in Laguna de Bay (Philippines) and Mt Lofty Ranges (Australia)
1.2 Transforming existing industries	HORT/2000/127	Improving and maintaining productivity of bamboo for quality timber and shoots in Australia and the Philippines
	HORT/2003/045	Improvement of vegetable production and postharvest management systems in Cambodia and Australia
1.3 Overcoming soil loss, salinity and acidity	AH/2001/005	Salinity reduction in tannery effluents in India and Australia
	ASEM/2000/109	Farming systems research for crop diversification in Cambodia and Australia
	ASEM/2002/051	Sustaining and growing landcare systems in the Philippines and Australia
	FST/2003/002	Development and evaluation of sterile triploids and polyploid breeding methodologies for commercial species of Acacia in Vietnam, South Africa and Australia
	HORT/2003/045	Improvement of vegetable production and postharvest management systems in Cambodia and Australia
	SMCN/2002/085	Utilising basic soil data for the sustainable management of upland soils in Vietnam and Australia
	SMCN/2004/069	Minimising agricultural pollution to enhance water quality in Laguna de Bay (Philippines) and Mt Lofty Ranges (Australia)

Priority Goals	ACIAR projects	Key Australian project title/outputs
1.4 Reducing and capturing emissions in transport and energy generation	LWR/2003/039	Improving the management of water and nitrogen fertiliser for agricultural profitability, water quality and reduced nitrous oxide emissions in China and Australia
	LWR/2004/035	Technology for direct drilling into rice and other heavy stubbles in Pakistan and Australia
1.5 Sustainable use of Australia's biodiversity	CP/2001/027	Adaptation of low-chill temperate fruits to Australia, Thailand, Lao PDR and Vietnam
	FIS/2001/058	Sustainable tropical spiny lobster aquaculture in Vietnam and Australia
	FIS/2002/074	Capacity development to monitor, analyse and report on Indonesian tuna fisheries
	FIS/2003/037	Artisanal shark and ray fisheries in eastern Indonesia and their relationships with Australian resources
	FIS/2004/065	Culture of promising indigenous fish species and bioremediation for barramundi aquaculture in northern Australia and PNG
	FST/2002/097	Identification of optimum genetic resources for establishment of local species of sandalwood for plantations and agroforests in Vanuatu and Cape York Peninsula
1.7 Responding to climate change and variability	ASEM/2003/009	Bridging the gap between seasonal climate forecasts and decision-makers in agriculture
	SMCN/2002–033	Seasonal climate forecasting for better irrigation systems management in Lombok

Theme 4: Safeguarding Australia

Priority Goals	ACIAR projects	Key Australian project title/outputs
4.2 Understanding our region and the world	ASEM/2003/015	Enhancing PNG smallholder cocoa production through greater adoption of disease control practices
	ASEM/2004/047	Sustainable management of coffee green scales in Papua New Guinea
	FIS/2004/065	Culture of promising indigenous fish species and bioremediation for barramundi aquaculture in northern Australia and PNG
	FST/2003/025	Community partnerships for plantation forestry; enhancing rural incomes from forestry in eastern Indonesia and Australia

Priority Goals	ACIAR projects	Key Australian project title/outputs
4.3 Protecting Australia from invasive diseases and pests	AH/2001/054	The identification of constraints and possible remedies to livestock production by zoonotic diseases in the South Pacific
	AH/2004/020	The development of a national surveillance system for classical swine fever, avian influenza and foot and mouth disease in Indonesia
	AH/2004/032	Identification of policy responses to minimise negative socioeconomic impacts of an avian influenza epidemic in Indonesia
	ASEM/2004/047	Sustainable management of coffee green scales in Papua New Guinea
	CIM/1999/072	Oilseed brassica improvement in China, India and Australia
	CIM/2000/038	Use and improvement of sugarcane germplasm
	CP/2000/043	Huanglongbing management for Indonesia, Vietnam and Australia
	CP/2003/029	Management of potato late blight in Papua New Guinea
	CP/2003/042	Fruit fly management in Papua New Guinea
	CP/2004/034	Diagnosis and management of wilt diseases of banana in Indonesia
	FST/2004/053	Establishing forest pest detection systems in South Pacific countries and Australia
	HORT/1998/140	Postharvest handling and disease control in melons in China and Australia
	HORT/2003/046	Integrated control of powdery mildew and other disease, weed and insect problems in squash in Tonga and Australia
	HORT/2003/071	Integrated pest management and supply chain improvement for mangoes in the Philippines and Australia
	HORT/2004/030	Control of Asian honeybees in Solomon Islands
	HORT/2004/049	Improved farming systems for managing soil-borne pathogens of ginger in Fiji and Australia
	HORT/2005/142	Improving mandarin production in Bhutan and Australia through the implementation of on-farm best management practices
	HORT/2005/153/1	Development of integrated crop management practices to increase sustainable yield and quality of mangoes in Pakistan and Australia
	LPS/1998/026	Lucerne adapted to adverse environments in China and Australia

Reporting against other statutory requirements

ACIAR Values

We are committed to partnerships that:

- help reduce poverty
- respect each other's values, cultures and laws.

In our work we believe in:

- open, honest communication that is personally and culturally sensitive, within and beyond ACIAR
- scientific and professional excellence to guide decision making
- innovation and creativity within the context of the APS values
- efficient use of resources.

As an organisation we value:

- the commitment of our people and partners to the mission and work of ACIAR
- integrity, consultation, professionalism, fairness and ethics
- a satisfying workplace.

Management of human resources

Ms Sue Allen, Personnel Administrator

Snapshot of ACIAR staff as at 30 June 2007

Staff employed under the PS Act	48* FTE: 43.84
Median length of APS service	6.2 years
Median age	50
Women as % of total	54.2%
NESB staff as % of total	16.7%
Part-time staff as % of total	20.8%
Non-ongoing staff as % of total	33.3%
Employee turnover for 2006–07	25.3%

** excludes five inoperative employees*

ACIAR 4-year perspective

Staff employed under the Public Service Act 1999

	2003–04	2004–05	2005–06	2006–07
Staff at 30 June	47	45	48	48
Staff (FTE)	44.3	42.04	44.44	43.84
Base salaries	$3,362,474	$3,159,222	$3,483,490	$3,579,420
Cessations	11	12	6	13
Staff turnover	23.4%	26.7%	12.8%	25.3%
Women	57.4%	51.1%	47.9%	54.2%
Part-time	14.9%	20%	20.8%	20.8%
Non-ongoing	21.3%	26.7%	31.3%	33.3%
Learning and development activities	$85,596	$44,158	$66,793	$60,507

Overseas staff

	2003–04	2004–05	2005–06	2006–07
Staff (FTE)	18.8	20.5	20.5	20.5
Base salaries	$505,919	$440,224	$575,523	$664,683
Learning and development activities	$8,047	$8,990	$5,344	$6,147

Performance management

ACIAR's performance management scheme operates on a 3-point rating scale and employees who are rated as 'meets expectations' or 'exceeds expectations' in the annual performance assessment receive an increment (where they are not on the top of a salary range). In the cycle concluded in June 2007 there were 43 completed assessments. Thirty employees were rated as 'meets expectations' and 10 as 'exceeds expectations', with two employees rated as being between meeting and exceeding expectations. Of the 42 employees rated as meeting expectations or higher, 12 were advanced one salary point. There was one employee rated as not meeting expectations.

Learning and development

In 2006–07 ACIAR spent $60,507 on external training for its Canberra-based employees, which averages at $1,261 per employee. This expenditure does not take into account in-house training and workshops conducted by consultants for ACIAR employees or the attendance of Research Program Managers at work-related conferences and seminars in Australia and overseas. ACIAR continues to provide substantial study assistance for formal study and employees are encouraged to take up broader development opportunities to enhance their skills.

Organisation bonuses

Employees rated as 'meets expectations' or higher in the performance cycle, who have worked for ACIAR for at least 9 months and who were still employed by ACIAR on 30 June 2007, received a bonus of $2,000 in recognition of ACIAR's achievements against the 2006–07 Annual Operational Plan. Part-time employees received a pro rata payment based on hours worked. Thirty-seven employees received the performance bonus with payments totaling $64,740.

Classif-ication*	Number of employees	Aggregated amount	Average bonus payment
APS2-4	11	$19,000	$1,727
APS5-6	10	$17,160	$1,716
EL1-EL2	6	$8,580	$1,430
RPM Group, incl CoD1	10	$20,000	$2,000
Total for agency	37	$64,740	$1,750

** Due to the small number of staff employed, including some classification levels with less than five employees, classifications have been aggregated to ensure that payments to individuals cannot be identified.*

Occupational health and safety

There were no accidents or dangerous occurrences giving rise to issue of any notices or directions under the *OHS (Commonwealth Employment) Act 1991*.

ACIAR employees and their families have access to a free Employee Assistance Program that provides professional counselling services and a variety of other services including career and personal planning and individual assistance to line managers. The provider reported that there was a lower usage of this service in 2006–07.

ACIAR promotes a healthy lifestyle for employees by providing access to annual health assessments, subsidising healthy lifestyle initiatives, arranging annual flu injections and providing pre-travel assessments for overseas travellers which includes vaccinations and medical kits.

During this reporting period, ACIAR developed a Pandemic Influenza Contingency Plan in accordance with Australian Government guidelines and appointed a Pandemic Influenza Contact Officer to monitor developments in this area.

ACIAR engages a qualified workplace assessor to conduct ergonomic assessments for new employees and employees who experience discomfort at their workstation and modifications are made to work practices and work areas as required.

Commonwealth Disability Strategy (CDS)

ACIAR is committed to ensuring that all people seeking employment have fair access to employment opportunities. Applicants with disabilities are encouraged to identify their disability when applying for vacancies and ACIAR's Recruitment and Selection Policy provides advice to selection panels on making provision for the needs of these applicants. People seeking employment with ACIAR can find guidance and assistance on the recruitment page of ACIAR's website.

ACIAR's Certified Agreement and supporting HR Manual provides a framework and guidelines for dispute resolution and internal review of employment actions.

All-staff workshop

ACIAR Week was held from 5–9 February 2007 with local and overseas employees working through an agenda which included forward planning and discussion of priority issues facing the Centre and a number of workshops and information sessions.

Workplace diversity

In this reporting period ACIAR's policies and guidelines were reviewed by a specialist management consultant to determine if there are any aspects of our people management practices that might inhibit our ability to recruit a diverse workforce. The consultant concluded that ACIAR's employment practices are very progressive and flexible and that they provide a good foundation to accommodate people of diverse backgrounds.

Comparison of workforce statistics against service-wide figures

Category	30 June 2004		30 June 2005		30 June 2006	
	APS	ACIAR[1]	APS	ACIAR[2]	APS	ACIAR[3]
Ongoing	93.2%	77.8%	92.4%	75.6%	91.9%	70.2%
Non-ongoing	6.8%	22.2%	7.6%	24.4%	8.1%	29.8%
Full-time	89.9%	86.7%	88.7%	80.0%	88.7%	78.7%
Part-time	10.1%	13.3%	11.3%	20.0%	11.3%	21.3%
Women	53.1%	55.6%	54.2%	53.3%	55.8%	48.9%
ATSI	2.4%	0%	2.2%	0%	2.0%	0%
NESB1	5.3%	13.3%	5.4%	13.3%	5.6%	12.8%
PWD	3.9%	0%	3.8%	0%	3.4%	4.3%
Under 25	4.3%	2.2%	4.0%	4.4%	4.4%	4.3%
25–34	25.5%	13.4%	25.1%	13.3%	24.8%	12.8%
35–44	30.9%	11.1%	30.5%	15.6%	30.0%	17.0%
45–54	30.0%	42.2%	30.3%	26.7%	30.1%	29.7%
55 and over	9.3%	31.1%	10.1%	40.0%	10.6%	36.2%
APS1-2	6.3%	6.7%	5.1%	2.2%	4.5%	2.1%
APS3-4	36.6%	33.3%	35.7%	33.3%	36.1%	32,0%
APS5-6	33.6%	15.6%	34.1%	17.8%	33.8%	32.0%
EL	21.3%	30.0%	22.6%	44.5%	23.0%	44.7%
SES[4]	1.5%	4.4%	1.6%	2.2%	1.7%	2.1%
Graduate/ trainee	0.6%	0%	0.9%	0%	1.1%	2.1%

1 *Based on 45 APS employees, excluding the Director*
2 *Based on 45 APS employees, excluding the Director*
3 *Based on 47 APS employees, excluding the Director*
4 *SES figures include 1 SES equivalent employee*

Productivity savings—Certified Agreement Year 2

ACIAR estimated that the 3.5% salary increase to be paid in the second year of the Certified Agreement would equate to a cost of $294,366. During 2006–07, savings of $448,146 were achieved through:

- movement of employees from full-time to part-time
- positions being filled at lower levels or at lower salary points
- positions being vacant for periods of time
- employees taking unpaid leave
- savings on superannuation due to vacant positions.

Other productivity benefits were achieved by abolishing leave banking for Research Program Managers and the introduction of a simplified travel acquittal system.

A table showing the comparison of costs and savings over the first 2 years of the Agreement is below.

	Year 1 2005–06	Year 2 2006–07
Projected cost	$155,236 (4% increase)	$294,366 (3.5% increase)
Actual savings	$285,055	$448,146
Net savings	$129,819	$153,780

In addition, funding was allocated to initiatives relating to training and fellowships without additional staffing supplementation. From 2005–06 to 2006–07 the number of students has increased by 54% which equates to a saving of $36,629 (based on salary and superannuation at the APS6 level). This figure is not included in the above table.

A breakdown of staff numbers in each broadband at 30 June 2007 is in Appendix 5 (page 217).

Sick Leave and Absenteeism

ACIAR's sick and personal leave usage is provided with figures for the previous 2 years for comparison purposes. The significant increase in the use of sick leave in 2006–07 is due to two employees having critical illnesses during this reporting period.

Category	Type of leave	2004–05	2005–06	2006–07
1	Paid or unpaid sick leave	338.44 days (3.0% of available working days)	343.42 days (2.95% of available working days)	451.2 days (3.91% of available working days)
2	Paid or unpaid personal leave	108.92 days (0.95%)	73.11 days (0.63%)	56.4 days (0.49%)
Total		447.36 days (3.95%)	416.53 days (3.57%)	507.6 days (4.4%)

External scrutiny and auditing

Reports by the Auditor General and the ANAO

The only ACIAR-specific audit completed in 2006–07 was of the 2005–06 financial statements, (unqualified).

Through its Audit Committee the Centre looks at the findings and recommendations of relevant Australian National Audit Office (ANAO) reports for their applicability to ACIAR. These audits include the following across agency audits:

- Audit Report No. 5—The Senate Order for the Departmental and Agency Contracts
- Audit Report No. 6—Recordkeeping including the Management of Electronic Records
- Audit Report No. 15—Audits of Financial Statements of Australian Government Entities for the Period Ended 30 June 2006
- Audit Report No. 21—Implementation of the revised *Commonwealth Procurement Guidelines*
- Audit Report No. 43—Managing Security Issues in Procurement and Contracting.

The Audit Committee also examines Better Practice Guides issued by the ANAO in regard to their applicability to improve systems and processes. Reports of interest were:

- Developing and Managing Contracts
- Legal Services Arrangements in Australian Government Agencies.

Judicial decisions and decisions of administrative tribunals

There were no decisions made at either the judicial or administrative tribunal level during the 2006–07 financial year that impacted on ACIAR. No impending decisions relating directly to ACIAR are outsourced or pending.

There are no significant developments relating to the increasing of, limiting of, or other changes to external scrutiny arrangements.

Purchasing and tendering compliance

Purchasing

ACIAR complies with the *Commonwealth Procurement Guidelines* and the objectives of Commonwealth Procurement. The Centre applies value for money as the core principle in the procurement process, consistent with section 4 (4.1) of the Guidelines. ACIAR's Chief Executive Instructions include details on delegations, the spending of public moneys and dealing with public property. These instructions have been developed in accordance with the *Commonwealth Procurement Guidelines*, the *Environmental Purchasing Guide* and various Finance Circulars.

Most of ACIAR's procurement falls into either: Exemption 5—procurement for the direct purpose of providing foreign assistance, or Exemption 6—procurement of research and development

services, but not the procurement of inputs to research and development undertaken by the agency, as outlined in Appendix B: *Exemptions from Mandatory Procurement Procedures,* in the *Commonwealth Procurement Guidelines*.

These contracts and agreements, under Exemption 5 and 6 include: contracts for scoping and feasibility studies; appraisals relating to project design, monitoring and evaluation of programs or projects; project implementation; procurement of goods and services for projects; agreements with NGOs, other governments and international agencies; follow-up activities including workshops to disseminate project outcomes; and post-project assessments and reviews. In relation to project activities the Centre:

- publishes an Annual Operational Plan that includes areas of priority for research, developed in consultation with partner countries
- disseminates this to research providers, both within and outside Australia, inviting suitable experts to submit ideas and develop these in consultation with ACIAR's Research Program Managers.

Competitive tendering

No open purchasing (over $80,000) involving tendering was carried out during 2006–07. ACIAR did not let any contracts for $80,000 or more that did not provide the Auditor General access to a contractor's premises. No contracts were let in excess of $10,000 that were exempted from publication in AusTender due to Freedom of Information exemptions.

Purchasing activities are subject to the provisions of the Chief Executive Instruction (CEI 6.02 Procurement) relating to procurement. In accordance with the *Commonwealth Procurement Guidelines*, ACIAR prepared an Annual Procurement Plan for 2006–07 and this was published on AusTender.

Consultants and contracts

The policies and procedures for selecting consultants, and approving expenditure for them, are set out in the Chief Executives Instructions. The procurement method is determined having regard to the nature of the work involved and the broad cost thresholds set out in the Chief Executives Instructions.

ACIAR's reporting against the Senate Order of 20 June 2001 requiring departments and agencies to list contracts entered into with a value of more than $100,000, that were still to be concluded or had been concluded during the previous 12 months, is available on the ACIAR website and reported separately to that outlined below.

During 2006–07, six contracts for consultancies were entered into, involving expenditure of $175,509. The aggregate value of these contracts was $246,200 (refer to Table1) and compared to $242,040 in 2005–06.

Advertising and market research

ACIAR did not enter into contracts with any advertising agencies, market researchers or polling organisations or media advertising organisations. No direct marketing of information to the public was undertaken, and ACIAR has no contracts. The Centre maintains mailing lists of project personnel and those requesting selected material.

Discretionary grants

ACIAR did not issue any discretionary grants during 2006–07 or have any ongoing grants from previous years.

Table 1: Consultants and contracts 2006–07

Consultant name	Description	Contract price	Selection process [1]	Justification [2]
RSM Bird Cameron	Provision of Internal Audit Services	$55,000	Select tender	Independent skills
Curtin University	Overseas Stakeholder Survey	$39,870	Direct Sourcing	Need for specialised or professional services
Tim Reeves and Associates	Overseas Stakeholder Survey	$40,330	Direct Sourcing	Need for specialised or professional services
Clayton Utz	Legal advice relevant to Uhrig review	$11,890	Direct Sourcing	Need for specialised or professional services
Centre for International Economics	ACIAR project database	$49,610	Direct Sourcing	Need for specialised or professional services
Centre for International Economics	ACIAR project history analysis	$49,500	Direct Sourcing	Need for specialised or professional services
TOTAL		$246,200		

[1] Explanation of selection process terms drawn from the Commonwealth Procurement Guidelines (January 2005):
[2] Justification for decision to use consultancy: a. skills currently unavailable within agency; b. need for specialised or professional skills; c. need for independent research or assessment.

In addition to these consultancies, ACIAR had a large number of aid/research contracts to provide services related mainly to the research program. These contracts totalled $3,546,000 in 2006–07 compared to $3,667,000 in 2005–06 (refer to Table 2).

All contracts over $10,000 were reported in AusTender, contracts were let in excess of $10,000 that were exempted from publication in AusTender due to Freedom of Information exemptions.

Purchasing activities are subject to the provisions of the Chief Executive Instructions (CEI 6.02 Procurement) relating to procurement. In accordance with the *Commonwealth Procurement Guidelines*, ACIAR prepared an Annual Procurement Plan for 2006–07 and this was published on AusTender.

Table 2: Consultancy services let during 2006–07, to $10,000 or more

ACIAR consultancy contracts				Other contracts and agreements*	
	No. of new contracts awarded	Financial limits of new contracts awarded	2006–07 Expenditures	No. of new contracts and agreements awarded	Financial limits of new contracts and agreements awarded
Contracts and agreements				185	$3,546,000
Tenders	1	$55,000	$24,362		
Calls for quotations					
Direct approach	5	$191,200	$151,147		
Total	6	$246,200	$175,509	185	$3,546,000

** The distinction between a consultancy contract and other contract forms is in accordance with FMG No. 15: Guidance on Procurement Publishing Obligations*

Appendices

Appendix 1: Basis of authority

ACIAR is governed under the *Australian Centre for International Agricultural Research Act 1982* (the ACIAR Act), proclaimed on 3 June 1982 as Act No. 9 of 1982. The ACIAR Act was described as 'An Act to encourage research for the purpose of identifying, or finding solutions to, agricultural problems of developing countries'.

The ACIAR Act was amended in 2007, coming into effect from 1 July 2007, following a review of the Centre conducted under the auspices of the Review of *Corporate Governance of Statutory Authorities and Office Holders* undertaken by Mr John Uhrig AC. ACIAR's existing governance arrangements were reviewed against the principles and recommendations of the Uhrig Review, together with a range of other statutory authorities in the Foreign Affairs and Trade portfolio, to achieve the most effective accountability and governance structures across the whole of government.

The principal purpose of the amendments introduced in the *Australian Centre for International Agriculture Amendment Act 2007* (the Amendment Act), arising from the review process is to change the governance arrangements of ACIAR. This will replace the Board of Management with an executive management structure involving a Chief Executive Officer (CEO) and a seven-member Commission. The Amendment Act was promulgated by Royal Assent on 28 June 2007, coming into force from 1 July 2007. The section below, describes the basis of ACIAR's authority, its functions and powers for the 2006–07 financial year, prior to the Amendment Act taking force. Under Sections 4–6 of the ACIAR Act, ACIAR is established as a body corporate with the powers of a body corporate. It has a seal, and it may sue and be sued.

Our functions

ACIAR's role is described in Section 5 of the ACIAR Act.

(1) The functions of the Centre are:
   (a) to formulate programs and policies with respect to agricultural research for either or both of the following purposes:
      (i) identifying agricultural problems of developing countries
      (ii) finding solutions to agricultural problems of developing countries
   (b) to commission agricultural research by persons or institutions (whether the research is to be conducted in Australia or overseas) in accordance with such programs and policies,
   (c) to communicate to persons and institutions the results of such agricultural research,
   (d) to establish and fund training schemes related to its research programs,
   (e) to conduct and fund development activities related to its research programs,
   (f) to fund international agricultural research centres.

(2) In performing its functions with respect to agricultural research, the Centre shall have regard to the need for persons or institutions in developing countries to share in that research.

(3) Nothing in this section authorises, or permits, the Centre to carry out research on its own behalf.

Our powers

ACIAR's powers are established through Section 6 of the ACIAR Act. The Centre has the powers of a body corporate:

(1) subject to this Act, the Centre has power to do all things necessary or convenient to be done for or in connection with the performance of its functions.

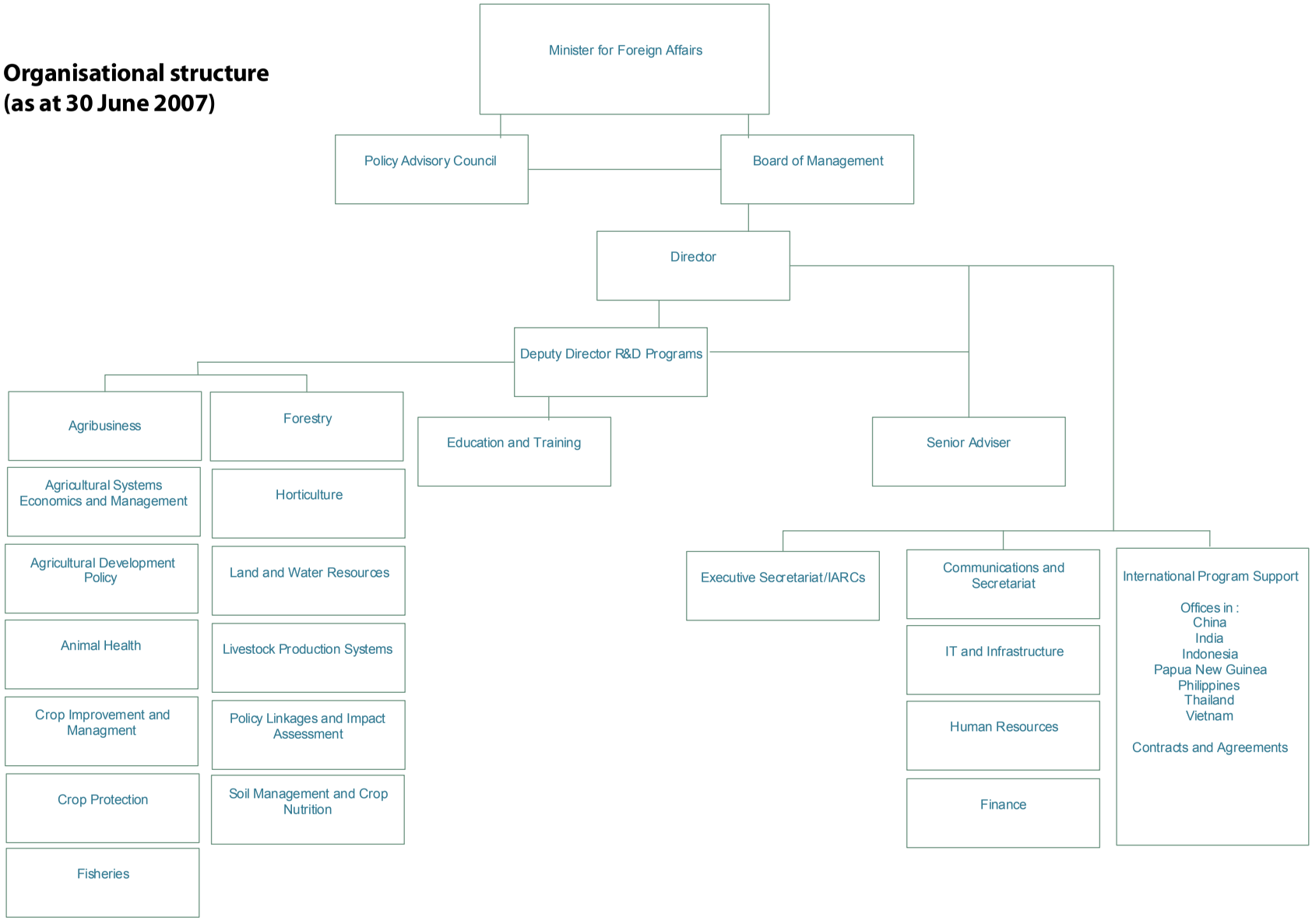
(2) without limiting the generality of subsection (1), the powers of the Centre include power to accept gifts, devises, bequests or assignments made to the Centre whether on trust or otherwise, and whether unconditionally or subject to a condition and, if a gift, devise, bequest or assignment is accepted by the Centre on trust or subject to a condition, to act as trustee or to comply with the condition, as the case may be.

(3) notwithstanding anything contained in this Act, any money or other property held by the Centre upon trust or accepted by the Centre subject to a condition shall not be dealt with except in accordance with the obligations of the Centre as trustee of the trust or as the person who has accepted the money or other property subject to the condition, as the case may be.

Our governing body

Part three of the ACIAR Act establishes the Board of Management as the governing body responsible for the management and control of the Centre and its affairs. The ACIAR Act also defines the constitution of the Board, its delegations and the authority by which the Minister may give directions to the Board.

Organisational structure (as at 30 June 2007)



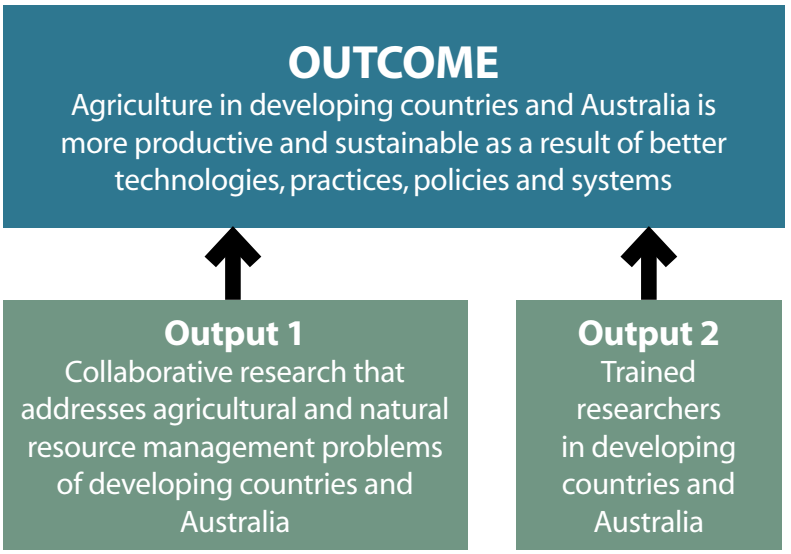
Appendix 2: Outcome and outputs framework

ACIAR's single outcome, specified in the Portfolio Budget Statement, describes the Centre's role within the context of Australia's development assistance program.

The achievement of this outcome relies on the contribution of two outputs:

- Output 1 aggregates the activities of bilateral and multilateral research and development (R&D) programs that address the agreed priorities of developing countries
- Output 2 focuses on capacity-building activities delivered through formal training of researchers. (In addition to formal training, much training takes place through involvement in R&D projects themselves.)

Outcome and outputs structure



Corporate and operational planning

In April 2006, the White Paper on the Australian Government's Aid Program: *Australian Aid: Promoting growth and stability* was released. The paper sets out the plan for Australia's overseas aid program for the next 10 years. This plan outlines the challenges and directions for ACIAR with regard to its strategic planning and operations. Reporting against the White Paper is covered in the section 'Tracking performance: Aid White Paper—ACIAR's annual performance' (page 170).

ACIAR publishes a formal Annual Operational Plan for each financial year, to guide external stakeholders through the priority areas for research in partner countries. Key research programs in each country are also identified, creating a two-way management matrix against which funds are allocated. Reporting against the Annual Operational Plan is covered in the section 'Tracking performance against the 2006–07 AOP' (page 181).

Resources for outcome

Financial performance

In 2006–07 ACIAR's direct expenditure on Outputs 1 and 2, including bilateral and multilateral research projects, education and training of researchers and project-related publications disseminating research results, represented 84% of expenditure.

The Centre has continued to maintain its healthy financial position. For 2006–07 we operated with a small surplus of $55,343. ACIAR will continue to operate a balanced budget in future years to maintain this position.

Price of departmental outcomes

Outcome 1—Agriculture in developing countries and Australia is more productive and sustainable as a result of better technologies, practices, policies and systems.

	(1) Budget* 2006–07 $'000	(2) Actual expenses 2006–07 $'000	Variation (column 2 minus column 1) $'000	Budget** 2007–08 $'000
Administered Expenses[1] (including third party outputs)	n/a	n/a	n/a	n/a
Total Administered Expenses	n/a	n/a	n/a	n/a
Price of Departmental Outputs				
Output Group 1.1: Collaborative research that addresses agricultural and natural resource management problems of developing countries and Australia	46,607	46,969	362	46,711
Subtotal Output Group 1.1	46,607	46,969	362	46,711
Output Group 1.2: Trained researchers in developing countries and Australia	3,755	3,338	(417)	4,768
Subtotal Output Group 1.2	3,755	3,338	(417)	4,768
Revenue from Government (Appropriation) for Departmental Outputs	50,362	50,307	(55)	51,479
Revenue from other sources	7,589	10,536	2,947	12,375
Total Price of Outputs	57,941	60,843	2,902	63,854
TOTAL FOR OUTCOME 1 (Total Price of Outputs and Administered Expenses)	57,941	60,843	2,902	63,854

** Full-year budget, including additional estimates*

*** Budget prior to additional estimates*

[1] ACIAR does not have administered expenses

Appendix 3: ACIAR's active research projects 2006–07

Bilateral research projects—projects may be active in more than one country

	Bangladesh
CIM/2001/039	Integrated management of Botrytis Grey Mould of chickpea in Bangladesh and Australia
LWR/2005/146	Expanding the area for Rabi-season cropping in southern Bangladesh
LWR/2005/042	Scoping study to assess the technical and economic feasibility of wheat production in southern Bangladesh
LWR/2005/001	Addressing constraints to pulses in cereals-based cropping systems, with particular reference to poverty alleviation in north-west Bangladesh
	Bhutan
LWR/2007/212	Opportunities to improve land and water management in Bhutan
	Burma (Myanmar)
AH/2002/042	Control of Newcastle disease and identification of major constraints in village chicken production systems in Myanmar
	Cambodia
ADP/2000/007	Farmer-based adaptive rodent management, extension and research system in Cambodia
ASEM/2003/012	Improving the marketing system for maize and soybeans in Cambodia
ASEM/2003/007	CARF Cambodian Agricultural Research Fund
ASEM/2000/109	Farming systems research for crop diversification in Cambodia and Australia
AH/2006–078	Assessing and controlling the risks of disease spread in Mekong countries with an initial focus on Cambodia
AH/2006–077	Identifying research priorities for the development of the beef industry in Cambodia and Lao PDR with special reference to animal health interventions
AH/2006/025	Understanding livestock movement and the risk of spread of transboundary animal diseases
AH/2005/086	Best practice health and husbandry of cattle, Cambodia
AH/2002/099	Development of a model for the control of fasciolosis in cattle and buffaloes in the Kingdom of Cambodia
CIM/2006/040	Diversification and intensification of rainfed lowland cropping systems in Cambodia
CIM/2003/030	Improving understanding and management of rice pathogens in Cambodia
FIS/2003/003	Stock structure of two important Mekong River carp species (*Henicorynchus* spp.)
FIS/2002/068	Improving feeds and feeding for small scale aquaculture in Vietnam and Cambodia
HORT/2003/045	Improvement of vegetable production and postharvest management systems in Cambodia and Australia
PLIA/2006/012	Livestock health and vaccines in Cambodia and Lao PDR: scoping study and economic assessment
SMCN/2001/051	Assessing land suitability for crop diversification in Cambodia and Australia

	China
ADP/2002/021	Sustainable land use change in the north-west provinces of China
ADP/1998/128	Achieving food security in China implications of WTO accession
CIM/2002/093	Intensifying production of grain and fodder in Central Tibet farming systems
CIM/2000/038	Use and improvement of sugarcane germplasm
CIM/2000/035	Increased productivity of cool season pulses in rainfed agricultural systems of China and Australia
CIM/1999/094	Improving the productivity and sustainability of rainfed farming systems for the western Loess Plateau of Gansu province
CIM/1999/072	Oilseed Brassica improvement in China, India and Australia
FST/2001/086	Assessment of the potential of *Pinus radiata* for ecological restoration of the Yangtze River catchment in Aba Prefecture, Sichuan, China
FST/2001/021	Improving the value chain for plantation-grown eucalypt sawn wood in China, Vietnam and Australia: sawing and drying
FST/1999/095	Improving the value chain for plantation-grown eucalypt sawn wood in China, Vietnam and Australia: genetics and silviculture
HORT/2002/016	Improving the implementation of integrated crop management in Brassica vegetables through a decision support toolkit based on end-user needs in China and Australia
HORT/1999/081	Reducing spoilage and contamination risks of fresh vegetables in China and Australia
HORT/1998/140	Postharvest handling and disease control in melons in China and Australia
LWR/2005/059	Modelling water and solute processes and scenarios for optimisation of permanent raised bed systems in China, India, Pakistan and Indonesia
LWR/2003/039	Improving the management of water and nitrogen fertiliser for agricultural profitability, water quality and reduced nitrous oxide emissions in China and Australia
LWR/2002/113	Application of innovative irrigated cropping and soil filtration technology for wastewater reuse and treatment in China
LWR/2002/094	Promotion of conservation agriculture using permanent raised beds in irrigated cropping in the Hexi Corridor, Gansu, China
LWR/2002/018	Regional impacts of re-vegetation on water resources of the Loess Plateau, China, and the Middle and Upper Murrumbidgee Catchment, Australia
LWR/2000/120	Institutions and policies for improving water allocation and management in the Yellow River Basin, China
LPS/2005/129	Mineral response in Tibetan livestock
LPS/2002/104	Increasing milk production from cattle in Tibet
LPS/2001/094	Sustainable development of grasslands in western China
LPS/1998/026	Lucerne adapted to adverse environments in China and Australia
PLIA/2006/153	Evaluation of catchment filter pilot study in Shanxi, China
PLIA/2005/152	Australia–China linkage for improved rice cold tolerance
	East Timor
CIM/2005/079	Seeds of Life 2 Technical Advisory Committee
CIM/2003/014	Seeds of Life 2
LPS/2003/028	Biological control of two major weeds affecting crop and livestock production in East Timor
LPS/2003/004	Building agricultural knowledge and R&D capacity in Timor Leste: a small projects facility

	Federated States of Micronesia
FIS/2001/036	Maximising the economic benefits to Pacific island nations from management of migratory tuna stocks
	Fiji
ADP/2005/140	Participatory needs assessment for capacity building in extension (Pacific islands)
ADP/2003/069	Policy options for improving the value of land use in smallholder Fijian agriculture
ADP/2002/047	Trade liberalisation, agriculture and land degradation in Fiji: implications for sustainable development policies
AH/2001/054	The identification of constraints and possible remedies to livestock production by zoonotic diseases in the South Pacific
CP/2004/064	Biological control of 'mile-a-minute' (*Mikania micrantha*) in Papua New Guinea and Fiji
CP/2004/001	Taro pest: a computer-based information and diagnostics package for taro pests of the South Pacific
CP/2000/044	Taro beetle management in Papua New Guinea and Fiji
CP/1994/043	Virus indexing and DNA fingerprinting for the international movement and conservation of taro germplasm
FIS/2002/105	Economic and market analysis of the live reef fish food trade in Asia–Pacific
FIS/2001/075	Sustainable aquaculture development in Pacific islands region and northern Australia
FIS/2001/036	Maximising the economic benefits to Pacific island nations from management of migratory tuna stocks
FIS/1997/031	Pearl oyster resource development in the western Pacific
FST/2004/054	Improving value and marketability of coconut wood
FST/2004/053	Establishing forest pest detection systems in South Pacific countries and Australia
HORT/2006/055	Developing the ornamentals industry in the Pacific: an opportunity for income generation
HORT/2006/053	Evaluation of the impact of Dasheen mosaic virus and other viruses on taro yield
HORT/2004/063	Integrated pest management in a sustainable production system for Brassica crops in Fiji and Samoa
HORT/2004/049	Improved farming systems for managing soil-borne pathogens of ginger in Fiji and Australia
HORT/2003/046	Integrated control of powdery mildew and other disease, weed and insect problems in squash in Tonga and Australia
PLIA/2005/150	A review of the policy and economic environment in the South Pacific and implications for the adoption of ACIAR project outcomes: a scoping study
SMCN/2001/038	Management of animal waste to improve the productivity of Pacific farming systems
	India
ADP/2002/089	Agricultural trade liberalisation and domestic market reforms in Indian agriculture
ADP/2000/004	International food safety regulation and processed food exports from developing countries: a comparative study of India and Thailand
AH/2002–038	Improved productivity, profitability and sustainability of sheep production in Maharashtra, India, through genetically enhanced prolificacy, growth and parasite resistance
AH/2001/005	Salinity reduction in tannery effluents in India and Australia
AH/1997/115	Increasing efficiency and productivity of ruminants in India and Australia by the use of protected nutrient technology
AH/1997/058	Increasing the productivity of cattle in India and Australia with rumen fungal treatments
CIM/2005/020	Molecular marker technologies for faster wheat breeding in India
CIM/2001/026	Drying systems to improve grain quality in north-east India

CIM/1999/072	Oilseed Brassica improvement in China, India and Australia
CIM/1996/025	Physiological and genetic approaches for the development of waterlogging tolerance in wheat on sodic/alkaline and neutral soils in India and Australia
FIS/2006/144	Strengthening regional mechanisms to maximise benefits to smallholder shrimp farmer groups adopting better management practices (BMPs)
FIS/2002/075	Application of PCR for improved shrimp health management in the Asian region
FIS/2002/001	Developing aquaculture in degraded inland areas in India and Australia
HORT/2002–030	Improving sub tropical citrus production in Sikkim and Australia
LWR/2005/059	Modelling water and solute processes and scenarios for optimisation of permanent raised bed systems in China, India, Pakistan and Indonesia
LWR/2004/033	Zero-tillage rice establishment and crop-weed dynamics in rice and wheat cropping systems in India and Australia
LWR/2002/100	Water harvesting and better cropping systems for the benefit of small farmers in watersheds of the East India Plateau
LWR/2002–032	Integrated manure nutrient management in soybean/wheat cropping systems on vertisols in Madhya Pradesh and Queensland
LWR/2001/014	Improving water resource management in India's agriculture: Search for effective institutional arrangements and policy frameworks
LWR/2000/089	Permanent beds for irrigated rice-wheat and alternative cropping systems in north-west India and south-east Australia
	Indonesia
AGB/2005/179	Policy Brief Cluster - Indonesia
AGB/2004/028	Social capital and rural development in eastern Indonesia
AGB/2002/012	Technical change in Thai and Indonesian agriculture: measurement, socioeconomic impact and policy implications
AGB/2000/072	Improving resource use efficiency in the coconut industry of north Sulawesi and its national implications
ADP/2003/060	Implementation of rodent management in intensive irrigated rice production systems in Indonesia and Vietnam
AH/2006/164	Future directions for animal health services in Indonesia
AH/2006/163	Assessment of zoonotic diseases in Indonesia
AH/2006/162	Commercialisation of infectious bursal disease vaccine
AH/2006/050	Control and characterisation of highly pathogenic avian influenza strains in poultry in Indonesia
AH/2005/107	Food safety research in Indonesia scoping study
AH/2004/074	Large scale production of a vaccine and diagnostic reagents for Jembrana disease in Indonesia
AH/2004/040	The epidemiology, pathogenesis and control of highly pathogenic avian influenza (HPAI) in ducks in Indonesia and Vietnam
AH/2004/032	Identification of policy responses to minimise negative socioeconomic impacts of an avian influenza epidemic in Indonesia
AH/2004/020	The development of a national surveillance system for classical swine fever, avian influenza, and foot and mouth disease in Indonesia
AH/2000/083	Development of a vaccine for the control of Gumboro in village and small poultry holdings in Indonesia
CP/2005/167	Optimising the productivity of the potato/Brassica cropping system in Central and West Java
CP/2004/034	Diagnosis and management of wilt diseases of banana in Indonesia
CP/2003/036	Managing pest fruit flies to enhance quarantine services and upgrade fruit and vegetable production in Indonesia

CP/2000/102	Selection for improved quality and resistance to Phytophthora pod rot, cocoa pod borer and vascular-streak dieback in cocoa in Indonesia
CP/2000/094	Diagnosis and control of soilborne fungal diseases of plants in Indonesia
CP/2000/043	Huanglongbing management for Indonesia, Vietnam and Australia
CP/1997/017	Reducing aflatoxin in peanuts using agronomic management and bio-control strategies in Indonesia and Australia
CP/1996/091	Biological control of *Chromolaena odorata* in Indonesia, Papua New Guinea and the Philippines
FIS/2007/029	Support for antibiotic residue testing in fisheries products
FIS/2006/144	Strengthening regional mechanisms to maximise benefits to small-holder shrimp farmer groups adopting better management practices (BMPs)
FIS/2006/002	Aceh aquaculture rehabilitation project
FIS/2005/169	Improving productivity and profitability of smallholder shrimp aquaculture and related agribusiness in Indonesia
FIS/2005/025	Fisheries rehabilitation in tsunami-affected Indonesia: Community needs assessment and resource status
FIS/2005/009	Technical capacity building and research support for the reconstruction of tsunami-affected, brackish water aquaculture ponds in Aceh
FIS/2003/037	Artisanal shark and ray fisheries in eastern Indonesia and their relationships with Australian resources
FIS/2003/027	Planning tools for environmentally sustainable tropical finfish cage culture in Indonesia and northern Australia
FIS/2002/111	Culture, capture conflicts: sustaining fish production and livelihoods in Indonesian reservoirs
FIS/2002/105	Economic and market analysis of the live reef fish food trade in Asia-Pacific
FIS/2002/077	Improved hatchery and grow out technology for marine finfish in the Asia-Pacific region
FIS/2002/076	Land capability assessment and classification for sustainable pond-based aquaculture systems
FIS/2002/075	Application of PCR for improved shrimp health management in the Asian region
FIS/2002/074	Capacity development to monitor, analyse and report on Indonesian tuna fisheries
FIS/2002/019	Management and policy frameworks for illegal, unreported and unregulated (IUU) fishing in Indonesian and Philippine waters
FIS/2000/065	Assessing the potential for low cost formulated diets for mud crab aquaculture in Australia, Indonesia and Vietnam
FST/2005/054	Seed distribution of Australian Trees: limited extension
FST/2004/058	Realising genetic gains in Indonesian and Australian plantations through water and nutrient management
FST/2003/048	Management of fungal root rot in plantation acacias in Indonesia
FST/2003/025	Community partnerships for plantation forestry: enhancing rural incomes from forestry in eastern Indonesia and Australia
LWR/2005/059	Modelling water and solute processes and scenarios for optimisation of permanent raised bed systems in China, India, Pakistan and Indonesia
LPS/2006/005	Evaluating strategies to improve calf survival in West Timor villages
LPS/2004/023	Strategies to increase growth of the weaned Bali calf
LPS/2004/005	Improving smallholder crop-livestock systems in eastern Indonesia
SMCN/2005/118	Restoration of annual cropping in tsunami-affected areas of Nanggroe Aceh Darussalam province, Indonesia

SMCN/2005/004	Management of soil fertility for restoring cropping in tsunami-affected areas of Nanggroe Aceh Darussalam province, Indonesia
SMCN/2002–033	Seasonal climate forecasting for better irrigation system management in Lombok
SMCN/1999/005	Improved soil management on rainfed vertisols in Nusa Tenggara
SMAR/2007/200	Securing the profitability of the Toraja and Flores coffee industries
SMAR/2007/197	Scoping horticulture projects in eastern Indonesia (passionfruit, cashews and tropical tree crops)
SMAR/2007/013	Opportunities to use cocoa pods and forages to address feed gaps in the dry season in south-east Sulawesi
SMAR/2006/096	Scaling-up herd management strategies in crop-livestock systems in Lombok, Indonesia
SMAR/2006/080	West Timor integrated timber-forage-livestock agroforestry (scoping study)
SMAR/2006/061	Building capacity in the knowledge and adoption of Bali cattle improvement technology in southern Sulawesi
SMAR/2006/003	Integrating forage legumes into the maize cropping systems of West Timor
SMAR/2005/074	Improving cocoa production through farmer involvement in demonstration trials of potentially superior and pest/disease resistant genotypes and integrated management practices
	Iraq
HORT/2004/010	Building integrated pest management capacity in Iraq initially concentrating on control of jasmine whitefly in the citrus/date system of central Iraq
	Kiribati
AH/2001/054	The identification of constraints and possible remedies to livestock production by zoonotic diseases in the South Pacific
FIS/2001/075	Sustainable aquaculture development in Pacific islands region and northern Australia
FIS/2001/036	Maximising the economic benefits to Pacific island nations from management of migratory tuna stocks
FIS/1997/031	Pearl oyster resource development in the western Pacific
PLIA/2005/150	A review of the policy and economic environment in the South Pacific and implications for the adoption of ACIAR project outcomes: a scoping study
SMCN/2001/038	Management of animal waste to improve the productivity of Pacific farming systems
	Democratic Peoples Republic of Korea
LWR/2001/048	Legumes and reduced tillage for rice and maize-based cropping in the Democratic Peoples Republic of Korea
	Lao PDR
ADP/2004/016	A systems approach to rodent management in upland environments in Lao PDR
ASEM/2006/060	Lao Agricultural Research Fund (LARF)
ASEM/2005/124	Extension approaches to scaling out livestock production in northern Lao PDR
ASEM/2005/008	Lao Agricultural Research Fund (LARF) Pilot
AH/2006/155	Vaccine business development in Lao PDR
AH/2006–077	Identifying research priorities for the development of the beef industry in Cambodia and Lao PDR with special reference to animal health interventions
AH/2006/025	Understanding livestock movement and the risk of spread of transboundary animal diseases
AH/2003/001	Management of CSF and FMD at the village level in Lao PDR
CIM/2006/041	Increased productivity and profitability of rice-based lowland cropping systems in Lao PDR

CP/2001/027	Adaptation of low-chill temperate fruits to Australia, Thailand, Lao PDR and Vietnam
FIS/2005/078	Culture-based fisheries development in Lao PDR
FIS/2003/003	Stock structure of two important Mekong River carp species (*Henicorynchus* spp.)
FST/2005/180	Lao PDR teak/non-timber forest products agroforestry scoping study
FST/2005/100	Value-adding to Lao PDR plantation timber products
FST/2002/112	Domestication of *Meliaceae* species in South-East Asia and Australia, particularly management of the problem of *Hypsipyla robusta* attack
LPS/1998/026	Lucerne adapted to adverse environments in China and Australia
PLIA/2006/012	Livestock health and vaccines in Cambodia and Lao PDR: scoping study and economic assessment
PLIA/2000/165	Facilitating farmer uptake of ACIAR project results: World Vision collaborative program
	Marshall Islands
FIS/2001/036	Maximising the economic benefits to Pacific island nations from management of migratory tuna stocks
	Nauru
FIS/2001/036	Maximising the economic benefits to Pacific island nations from management of migratory tuna stocks
	Nepal
CIM/1999/064	Lentil and Lathyrus in the cropping systems of Nepal: improving crop establishment and yield of relay and post-rice-sown pulses in the terai and mid-hills
	Pakistan
HORT/2005/160	Increasing citrus production in Pakistan and Australia through improved orchard management techniques
HORT/2005/157	Optimising mango supply chains for more profitable horticultural agri-enterprises in Pakistan and Australia
HORT/2005/153	Development of integrated crop management practices to increase sustainable yield and quality of mangoes in Pakistan and Australia
LWR/2005/059	Modelling water and solute processes and scenarios for optimisation of permanent raised-bed systems in China, India, Pakistan and Indonesia
LWR/2004/035	Technology for direct drilling into rice and other heavy stubbles in Pakistan and Australia
LWR/2002–034	Refinement and adoption of permanent raised-bed technology for the irrigated maize–wheat cropping system in Pakistan
LWR/2000/013	Sustainable agriculture in saline environments through serial biological concentration
PLIA/2006/136	Economic and policy constraints affecting the development of small scale dairy farmers in Pakistan
	Palau
FIS/2001/036	Maximising the economic benefits to Pacific island nations from management of migratory tuna stocks
	Papua New Guinea
ASEM/2006/068	Analytical equipment in support of the ACIAR/Unitech Postgraduate Scholarship Scheme
ASEM/2006/023	Re-commercialisation of the Papua New Guinea pyrethrum industry and improving harvested yields in Australia
ASEM/2004/077	Postgraduate Scholarship Scheme for UNITECH, University of Lae, Papua New Guinea
ASEM/2004/042	Assessing and extending schemes to enhance the profitability of the Papua New Guinea coffee industry via price premiums for quality
ASEM/2004/041	Productivity and marketing enhancement for peanut in Papua New Guinea and Australia

ASEM/2004/017	Assessment and improvement of quality management during postharvest processing and storage of coffee in Papua New Guinea
ASEM/2004/011	Evaluating domestic tuna fisheries projects
ASEM/2003/015	Enhancing Papua New Guinea smallholder cocoa production through greater adoption of disease control practices
ASEM/2003/010	Farmer evaluation and multiplication of sweet potato varieties on the north coast of Papua New Guinea
ASEM/2002/050	Economic performance and management of the Gulf of Papua prawn fishery
ASEM/2002/014	Improving productivity and the participation of youth and women in the Papua New Guinea cocoa, coconut and oil palm industries
ASEM/2001/037	Improving the marketing system for fresh produce of the highlands of Papua New Guinea
ASEM/2001/016	Microbial contaminants associated with sago processing and storage in Papua New Guinea
ASEM/2000/162	Scientific communication in Papua New Guinea
AH/2001/054	The identification of constraints and possible remedies to livestock production by zoonotic diseases in the South Pacific
CP/2006/063	Integrated pest management for Finschhafen disorder of oil palm in Papua New Guinea
CP/2006/051	Cocoa pod borer scoping study in Papua New Guinea
CP/2006/017	Management of *Eumetopina flavipes*: the vector of ramu stunt disease of sugarcane in Papua New Guinea
CP/2004/071	Reducing pest and disease impact on yield in selected Papua New Guinea sweet potato production systems
CP/2004/064	Biological control of 'mile-a-minute' (*Mikania micrantha*) in Papua New Guinea and Fiji
CP/2004/001	Taro pest: A computer based information and diagnostics package for taro pests of the South Pacific
CP/2003/042	Fruit fly management in Papua New Guinea
CP/2003/029	Management of potato late blight in Papua New Guinea
CP/2002/013	Biology, damage levels and control of red-banded mango caterpillar in Papua New Guinea and Australia
CP/2000/044	Taro beetle management in Papua New Guinea and Fiji
CP/1996/091	Biological control of *Chromolaena odorata* in Indonesia, Papua New Guinea and the Philippines
CP/1994/043	Virus indexing and DNA fingerprinting for the international movement and conservation of taro germplasm
FIS/2006/133	Study to evaluate options and opportunities to improve management arrangements for sea cucumber fisheries in Papua New Guinea
FIS/2006/001	Increasing capacity for regional fish feed manufacture in Papua New Guinea
FIS/2005/096	Assessment of the impact of the Papua New Guinea purse seine fishery on tuna stocks, with special focus on the impact of fish aggregation devices (FADs)
FIS/2004/065	Culture of promising indigenous fish species and bioremediation for barramundi aquaculture in northern Australia and Papua New Guinea
FIS/2002/056	Biology and status of the prawn stocks and trawl fishery in the Gulf of Papua
FIS/2001/083	Inland aquaculture in Papua New Guinea: improving fingerling supply and fish nutrition for smallholder farms
FIS/2001/075	Sustainable aquaculture development in Pacific islands region and northern Australia
FIS/2001/036	Maximising the economic benefits to Pacific island nations from management of migratory tuna stocks

FST/2004/061	Assessment, management and marketing of goods and services from cutover native forests in Papua New Guinea
FST/2004/055	Domestication and commercialisation of *Canarium indicum* in Papua New Guinea
FST/2004/050	Value-adding to Papua New Guinea agroforestry systems
FST/2004/009	Facilitating the availability and use of improved germplasm for forestry and agroforestry in Papua New Guinea
FST/2003/049	Review of portable sawmills in the Pacific: identifying the factors for success
HORT/2006/106	Screening and field trials of high-carotenoid sweet potatoes in Solomon Islands and Papua New Guinea to improve human vitamin A status
HORT/2006/055	Developing the ornamentals industry in the Pacific: an opportunity for income generation
LPS/2005/094	Improving the profitability of village broiler production in Papua New Guinea
SMCN/2006/031	Analysis of nutritional constraints to cocoa production in Papua New Guinea
SMCN/2004/067	Soil fertility management in the Papua New Guinea highlands for sweet potato based cropping systems
SMCN/2000/046	Overcoming magnesium deficiency in oil palm crops on volcanic ash soils of Papua New Guinea
SMCN/1998/028	Diagnosis and correction of nutritional disorders of yams
	Philippines
ASEM/2006/091	Enhancing tree seedling supply via economic and policy changes in the Philippines nursery sector
ASEM/2006/059	Community Agricultural Technology Program
ASEM/2005–062	Linking smallholder vegetable producers in the Philippines to urban markets a scoping study
ASEM/2003/052	Improving financial returns to smallholder tree farmers in the Philippines
ASEM/2003/009	Bridging the gap between seasonal climate forecasts and decision makers in agriculture
ASEM/2002/051	Sustaining and growing landcare systems in the Philippines and Australia
CP/1996/091	Biological control of *Chromolaena odorata* in Indonesia, Papua New Guinea and the Philippines
FIS/2007/045	Evaluation of production technology, product quality and market potential for the development of bivalve mollusc aquaculture in the Philippines
FIS/2003/033	Integrated fisheries resource management (Rinconada Lakes, Philippines and NSW Australia)
FIS/2002/077	Improved hatchery and grow out technology for marine finfish in the Asia–Pacific region
FIS/2002/019	Management and policy frameworks for illegal, unreported and unregulated (IUU) fishing in Indonesian and Philippine waters
HORT/2007/210	Detection surveys for mango seed and pulp weevils in Sarangani and Davao del Sur, Mindanao, Philippines
HORT/2006/111	Managing trade risks arising from the use of crop protection chemicals in horticultural crops in the Philippines and Australia
HORT/2006/006	Development of an embryo culture manual and an embryo transplantation technique for coconut germplasm movement and seedling production of elite coconut types
HORT/2003/071	Integrated pest management and supply chain improvement for mangoes in the Philippines and Australia
HORT/2001/049	Development of PRSV-P resistant papaya genotypes by introgression of genes from wild *Carica* species
HORT/2000/127	Improving and maintaining productivity of bamboo for quality timber and shoots in Australia and the Philippines

HORT/1997/094	Management of postharvest diseases of sub-tropical and tropical fruit using their natural resistance mechanisms
PLIA/2005/151	Philippine policy linkage scoping study
SMCN/2004/078	Evaluation and adoption of improved farming practices on soil and water resources, Bohol Island, the Philippines
SMCN/2004/069	Minimising agricultural pollution to enhance water quality in Laguna de Bay (Philippines) and Mt Lofty Ranges (Australia)
SMCN/2003/011	Herbicide use strategies and weed management options in Filipino and Australian cropping
SMCN/2003/006	Enhancing agricultural production in the Philippines by sustainable use of shallow groundwater
SMCN/2000/114	Evaluating biofumigation for soil-borne disease management in tropical vegetable production
	Republic of South Africa
FST/2003/002	Development and evaluation of sterile triploids and polyploid breeding methodologies for commercial species of Acacia in Vietnam, South Africa and Australia
FST/1996/124	High performance eucalypts and interspecific hybrids for marginal lands in southern and eastern South Africa and south-east Australia
LPS/2004/022	Pasture development for community livestock production in the Eastern Cape province of South Africa
LPS/2002/081	Development of emerging farmer crop–livestock systems in northern South Africa
LPS/1999/036	Developing profitable beef business systems for previously disadvantaged farmers in South Africa
	Samoa
CP/1994/043	Virus indexing and DNA fingerprinting for the international movement and conservation of taro germplasm
FIS/2001/085	Integration of broodstock replenishment with community-based management to restore trochus fisheries
FIS/2001/075	Sustainable aquaculture development in Pacific islands region and northern Australia
FIS/2001/036	Maximising the economic benefits to Pacific island nations from management of migratory tuna stocks
FST/2004/054	Improving value and marketability of coconut wood
HORT/2006/053	Evaluation of the impact of Dasheen mosaic virus on and other viruses on taro yield
HORT/2004/063	Integrated pest management in a sustainable production system for Brassica crops in Fiji and Samoa
HORT/2001/023	Horticulture industry development for market-remote communities
PLIA/2005/150	A review of the policy and economic environment in the South Pacific and implications for the adoption of ACIAR project outcomes: a scoping study
	Solomon Islands
ASEM/2004/011	Evaluating domestic tuna fisheries projects
FIS/2001/075	Sustainable aquaculture development in Pacific islands region and northern Australia
FIS/2001/036	Maximising the economic benefits to Pacific island nations from management of migratory tuna stocks
FIS/1997/031	Pearl oyster resource development in the western Pacific
FST/2004/055	Domestication and commercialisation of *Canarium indicum* in Papua New Guinea
FST/2003/049	Review of portable sawmills in the Pacific: identifying the factors for success
HORT/2006/106	Screening and field trials of high-carotenoid sweet potatoes in Solomon Islands and Papua New Guinea to improve human vitamin A status
HORT/2004/030	Control of Asian honeybees in Solomon Islands

HORT/2003/047	Improved plant protection in Solomon Islands
LPS/2003/054	Feeding village poultry in Solomon Islands
PLIA/2005/150	A review of the policy and economic environment in the South Pacific and implications for the adoption of ACIAR project outcomes: a scoping study
	South Pacific general
ADP/2005/140	Participatory needs assessment for capacity building in extension (Pacific islands)
FIS/2001/075	Sustainable aquaculture development in Pacific islands region and northern Australia
	Sri Lanka
HORT/1997/094	Management of postharvest diseases of sub-tropical and tropical fruit using their natural resistance mechanisms
	Thailand
ADP/2000/004	International food safety regulation and processed food exports from developing countries: a comparative study of India and Thailand
AGB/2002/012	Technical change in Thai and Indonesian agriculture: measurement, socioeconomic impact and policy implications
CIM/2006/041	Increased productivity and profitability of rice-based lowland cropping systems in Lao PDR
CP/2001/027	Adaptation of low-chill temperate fruits to Australia, Thailand, Lao PDR and Vietnam
FIS/2006/144	Strengthening regional mechanisms to maximise benefits to smallholder shrimp farmer groups adopting better management practices (BMPs)
FIS/2005/078	Culture-based fisheries development in Lao PDR
FIS/2003/003	Stock structure of two important Mekong River carp species (*Henicorynchus* spp.)
FIS/2002/077	Improved hatchery and growout technology for marine finfish in the Asia–Pacific region
FIS/2002/075	Application of PCR for improved shrimp health management in the Asian region
FST/2002/112	Domestication of Meliaceae species in South-East Asia and Australia, particularly management of the problem of *Hypsipyla robusta* attack
LPS/2005/052	The development of cattle and buffalo breeding strategies and activities based on BREEDPLAN in Thailand
PLIA/2000/165	Facilitating farmer uptake of ACIAR project results: World Vision collaborative program
	Tonga
AH/2001/054	The identification of constraints and possible remedies to livestock production by zoonotic diseases in the South Pacific
FIS/2006/172	Winged oyster pearl industry development in Tonga
FIS/2001/075	Sustainable aquaculture development in Pacific islands region and northern Australia
HORT/2006/108	The potential for tropical fruits production in Tonga: a feasibility and constraints analysis
HORT/2003/046	Integrated control of powdery mildew and other disease, weed and insect problems in squash in Tonga and Australia
LPS/2006/149	Using local feeds to reduce the cost of pig and poultry production in Tonga
PLIA/2005/150	A review of the policy and economic environment in the South Pacific and implications for the adoption of ACIAR project outcomes: a scoping study
SMCN/2001/038	Management of animal waste to improve the productivity of Pacific farming systems
SMCN/1998/028	Diagnosis and correction of nutritional disorders of yams
	Tuvalu
FIS/2001/036	Maximising the economic benefits to Pacific island Nations from management of migratory tuna stocks
SMCN/2001/038	Management of animal waste to improve the productivity of Pacific farming systems

	Vanuatu
FIS/2001/085	Integration of broodstock replenishment with community-based management to restore trochus fisheries
FIS/2001/075	Sustainable aquaculture development in Pacific islands region and northern Australia
FIS/2001/036	Maximising the economic benefits to Pacific island Nations from management of migratory tuna stocks
FST/2006/118	Sandalwood inventory
FST/2004/053	Establishing forest pest detection systems in South Pacific countries and Australia
FST/2002/097	Identification of optimum genetic resources for establishment of local species of sandalwood for plantations and agroforests in Vanuatu and Cape York Peninsula
PLIA/2005/150	A review of the policy and economic environment in the South Pacific and implications for the adoption of ACIAR project outcomes: a scoping study
SMCN/1998/028	Diagnosis and correction of nutritional disorders of yams
	Vietnam
ADP/2003/060	Implementation of rodent management in intensive irrigated rice production systems in Indonesia and Vietnam
ADP/2001/066	Strengthening agricultural market information activities in Vietnam
AH/2004/040	The epidemiology, pathogenesis and control of highly pathogenic avian influenza (HPAI) in ducks in Indonesia and Vietnam
CP/2007/211	Scoping study to identify research and implementation issues related to management of the Brown Planthopper/virus problem in rice in Vietnam
CP/2007/187	Technical support facility for commercialisation of protein bait production in North Vietnam
CP/2006/113	Scoping study to review the role of women and assess constraints in the production of indigenous Vietnamese vegetables
CP/2006/084	Targeting crop protection research and development (R&D) towards social change amongst ethnic minority communities in central Vietnam
CP/2006/083	Effective phosphine fumigation - technology transfer
CP/2002/115	Diseases of crops in the central provinces of Vietnam: diagnosis, extension and control
CP/2002/086	Improving postharvest quality of temperate fruits in Vietnam and Australia
CP/2001/027	Adaptation of low-chill temperate fruits to Australia, Thailand, Lao PDR and Vietnam
CP/2000/043	Huanglongbing management for Indonesia, Vietnam and Australia
CP/1998/005	Managing pest fruit flies to increase production of fruit and vegetable crops in Vietnam
FIS/2006/144	Strengthening regional mechanisms to maximise benefits to small-holder shrimp farmer groups adopting better management practices (BMPs)
FIS/2006/099	Capacity building and technology transfer in applied population genetics of aquatic species in southern Vietnam
FIS/2003/003	Stock structure of two important Mekong River carp species (*Henicorynchus* spp.)
FIS/2002/077	Improved hatchery and growout technology for marine finfish in the Asia-Pacific region
FIS/2002/068	Improving feeds and feeding for small scale aquaculture in Vietnam and Cambodia
FIS/2001/058	Sustainable tropical spiny lobster aquaculture in Vietnam and Australia
FIS/2000/065	Assessing the potential for low cost formulated diets for mud crab aquaculture in Australia, Indonesia and Vietnam
FIS/2000/018	The economics of developing reservoir aquaculture in Vietnam
FST/2003/002	Development and evaluation of sterile triploids and polyploid breeding methodologies for commercial species of Acacia in Vietnam, South Africa and Australia

FST/2002/112	Domestication of Meliaceae species in South-East Asia and Australia, particularly management of the problem of *Hypsipyla robusta* attack
FST/2001/021	Improving the value chain for plantation-grown eucalypt sawn wood in China, Vietnam and Australia: sawing and drying
FST/1999/095	Improving the value chain for plantation-grown eucalypt sawn wood in China, Vietnam and Australia: genetics and silviculture
LPS/2004/073	Capacity building on cattle production at Dong Giang district, Quang Nam province, Vietnam
LPS/2002/079	Utilisation of local ingredients in commercial feeds for pigs
LPS/2002/078	Improved beef production in central Vietnam
PLIA/2002/103	Enhancing project impact and science capability through ongoing evaluation
PLIA/2000/165	Facilitating farmer uptake of ACIAR project results: World Vision collaborative program
SMCN/2003/035	Improving the utilisation of water and soil resources for tree crop production in coastal areas of Vietnam and New South Wales
SMCN/2002/085	Utilising basic soil data for the sustainable management of upland soils in Vietnam and Australia
SMCN/2002/073	Efficient nutrient use in rice production in Vietnam achieved using inoculant biofertilisers
SMCN/2002/015	Managing groundwater access in Tay Nguyen (Central Highlands) Vietnam

Multilateral projects

Multilateral projects, those that have an International Agricultural Research Centre as the project leader (commissioned organisation) and are active in a single country are included in this list only, not in the country list above.

ADP/2001/068	Technical support for regional plant genetic resources development in the Pacific
ADP/2004/044	Economic analysis of technical barriers limiting agricultural trade of China
ADP/2004/045	Exploring alternative futures for agricultural knowledge, science and technology (KST)
AH/1998/054	Poverty alleviation and food security through improving the sweet potato–pig systems in Indonesia and Vietnam
ASEM/2004/047	Sustainable management of coffee green scales in Papua New Guinea
CIM/1999/062	Improving the quality of pearl millet residues for livestock
CIM/2002/106	Fertilisation-independent formation of embryo, endosperm and pericarp for apomictic hybrid rice
CIM/2003/066	Enhancing the adoption of improved cassava production and utilisation systems in Indonesia and East Timor
CIM/2003/067	Ensuring productivity and food security through sustainable control of yellow rust of wheat in Asia
CIM/2004/002	Wheat and maize productivity improvement in Afghanistan
CIM/2004/003	Plant health management for faba bean, chickpea and lentils
CIM/2004/004	Plant genetic resource conservation, documentation and utilisation in central Asia and the Caucasus
CIM/2004/024	Better crop germplasm and management for improved production of wheat, barley and pulse and forage legumes in Iraq
CIM/2006/176	Developing molecular markers to enable selection against chalk in rice
CP/2004/048	Integrated disease management (IDM) for anthracnose, *Phytophthora* blight and whitefly transmitted geminiviruses in chilli pepper in Indonesia

CP/2005/075	Integrated soil and crop management for rehabilitation of vegetable production in the tsunami-affected areas of NAD province, Indonesia
CP/2005/136	Mitigating the threat of banana *Fusarium* wilt: understanding the agroecological distribution of pathogenic forms and developing disease management strategies
FIS/2003/051	Improving sustainability and profitability of village sea cucumber fisheries in Solomon Islands
FIS/2003/059	Sea ranching and restocking sandfish (*Holothuria scabra*) in Asia–Pacific
FST/1999/035	The impact of changing agroforestry mosaics on catchment water yield and quality in South-East Asia
FST/2001/105	Can decentralisation work for forests and the poor? Policy research to promote sustainable forest management, equitable economic development, and secure local livelihoods in Indonesia
FST/2005/177	Improving economic outcomes for smallholders growing teak in agroforestry systems in Indonesia
HORT/2005/077	Integrated crop management package for sustainable smallholder gardens in Solomon Islands
HORT/2005/134	The use of pathogen-tested planting materials to improve sustainable sweet potato production in Solomon Islands and Papua New Guinea
LPS/2004/046	Forage legumes for supplementing village pigs in Lao PDR
LPS/2005–063	Improving the competitiveness of pig producers in an adjusting Vietnam market
LWR/2003/026	Water allocation in the Krishna River Basin to improve water productivity in agriculture
PLIA/2000/039	Impact of migration and/or off-farm employment on roles of women and appropriate technologies in Asian and Australian mixed farming systems
SMCN/2000/173	Improved fertiliser recommendations and policy for dry regions of southern Africa
SMCN/2006/013	Increasing food security and farmer livelihoods through enhanced legume cultivation in the Central Dry Zone of Myanmar

Note on project information for 2006–07

The Support for Market-Driven Adoptive Research (SMAR) is a subprogram of the Australia–Indonesia Partnership for Reconstruction and Development. The purpose of SMAR is to develop strengthened province-based agricultural R&D capacity that is market and client-driven and effectively transferring knowledge to end-users. A feature of this subprogram is integration with other subprograms on enhanced smallholder production and marketing and strengthened private sector agribusiness development.

Appendix 4: ACIAR publications 2006–07

New Publications	
Monographs	
119a	*Guidelines for surveillance for plant pests in Asia and the Pacific [Indonesian translation]*. Teresa McMaugh, Indonesian translation by Andi Trisyono, 2007, 192 pp.
123a	*Agricultural development and land policy in Vietnam [Vietnamese translation]*. Sally P. Marsh, T. Gordon MacAuley and Pham Van Hung (eds), Vietnamese translation by Pham Van Hung, 2007, 272 pp.
124	*Economically important sharks and rays of Indonesia*. W.T. White, P.R. Last, J.D. tevens, G.K. Yearsley, Fahmi and Dharmadi, 2006, 330 pp.
125	*Aquaculture in Papua New Guinea: status of freshwater fish farming*. Paul T. Smith (ed.), 2007, 123 pp.
126	*Agricultural development and land policy in Vietnam: policy briefs*. Sally P. Marsh, T. Gordon MacAulay and Pham Van Hung (eds), Vietnamese translation by P.V. Hung, 2007, 72 pp.
127	*Postlarval fish capture and grow-out*. Cathy Hair, Regon Warren, Ambo Tewaki and Ronnie Posalo, illustrated by Kisi Mae, 2007, 32 pp.
Proceedings	
122	*Improving yield and economic viability of peanut production in Papua New Guinea and Australia*. Rao C.N. Rachaputi, Graeme Wright, Lastus Kuniata and A. Ranakrishna (eds), 2006, 118 pp.
124	*Heart rot and root rot in tropical Acacia plantations*. Karina Potter, Anto Rimbawanto and Chris Beadle (eds), 2006, 92 pp.
125	*Coconut revival: new possibilities for the 'tree of life'*. S.W. Adkins, M. Foale and Y.M.S. Samosir (eds), 2006, 104 pp.
Technical Reports	
64	*Towards improving profitability of teak in integrated smallholder farming systems in northern Lao PDR*. Stephen Midgley, Michael Blyth, Khamphone Mounlamai, Dao Midgley and Alan Brown, 2007, 96 pp.
65	*A review of animal health research opportunities in Nusa Tenggara Timur and Nusa Tenggara Barat provinces, eastern Indonesia*. Bruce M. Christie, 2007, 76 pp.
66	*Modelling minimum residue thresholds for soil conservation benefits in tropical, semi-arid cropping systems*. M.E. Probert, 2007, 36 pp.
Working Papers	
62	*Report on a review of ACIAR-funded projects on Rhizobium during 1983–2004*. David F. Herridge, 2006, 48 pp.
63	*Economics and market analysis of the live reef-fish trade in the Asia–Pacific region*. Brian Johnston (ed.), 2007, 172 pp.

Impact Assessment Series Reports	
44	*Impact assessment of capacity building and training: assessment framework and two case studies.* Jenny Gordon and Kevin Chadwick, 2007, 120 pp.
45	*Development of sustainable forestry plantations in China: a review.* John W. Turnbull, 2007, 78 pp.
46	*Mite pests of honey bees in the Asia–Pacific region.* Michael Monck and David Pearce, 2007, 32 pp.
47	*Improved Australian tree species for Vietnam.* Hayden Fisher and Jenny Gordon, 2007, 36 pp.
48	*Assessment of capacity building: overcoming production constraints to sorghum in rainfed environments in India and Australia.* Chloe Longmore, M. Cynthia Bantilan and Jenny Gordon, 2007, 44 pp.
49	*Minimising impacts of fungal disease of eucalypts in South-East Asia.* Hayden Fisher and Jenny Gordon, 2007, 36 pp.
50	*Improved trade in mangoes from the Philippines, Thailand and Australia.* Michael Monck and David Pearce, 2007, 48 pp.
51	*Growing trees on salt-affected land.* James Corbishley and David Pearce, 2007, 44 pp.
Corporate publications	
	ACIAR Annual Report 2005–06. October 2006
	ACIAR Annual Operation Plan 2007–08. June 2007
	Adoption of ACIAR project outputs: studies of projects completed in 2002–2003. J. Gordon and J. Davis (eds), 2007, 64 pp.
	Country profiles: - *Indonesia* (November 2006) - *Vietnam* (November 2006) - *Pacific island countries* (November 2006) - *Papua New Guinea* (November 2006) - *China* (November 2006) - *Philippines* (November 2006) - *Cambodia, Lao PDR and Thailand* (November 2006) - *South Asia* (November 2006) - *East Timor* (November 2006)
	ACIAR Publications Catalogue 2007
	Partners in Research for Development magazine - Winter 2006 - Spring 2006 - March–June 2007 - July–October 2007
	More crop per drop from Australian International Research (Report on how Australian benefits from ACIAR water research)

Appendix 5: ACIAR staffing statistics

Public Service Act 1999 employee numbers at 30 June 2007*

	Ongoing staff	Non-ongoing staff	Total
Full-time			
Male	7	12	19
Female	18	1	19
Part-time			
Male	2	1	3
Female	5	2	7
Total	32	16	48

*** Excludes 5 inoperative employees*

At 30 June 2007, the Centre employed 69 employees, of whom 48 are employed under the *Public Service Act 1999* and are located in Canberra and 21 are at overseas missions and embassies. ACIAR has one male Chief of Division Grade 1 employee, which is equivalent to SES Band 1.

Staff turnover

Thirteen employees ceased employment with the Centre during 2006–07. The table below shows a comparison of employee turnover over the past 5 years.

	02–03	03–04	04–05	05–06	06–07
Retrenched	2	1	1	1	0
Promotions/ transfers	0	1	2	0	4
End of contract	4	1	0	0	5
Resigned	3	4	6	1	2
Retired	1	3	1	3	1
Leave without pay	2	1	1	0	1
Temporary movement	0	0	1	1	0
Total	12	11	12	6	13

Australian Workplace Agreements

At the end of June 2007 one SES equivalent employee and two non-SES employees were covered by Australian Workplace Agreements.

Non-Public Service Act Staff in Australia

Four people based in New South Wales provide services under contract for the Fisheries Program.

Non-APS employees employed overseas at 30 June 2007

ACIAR employs 21 (20.5 FTE) contract and locally engaged staff in Australian overseas missions to provide program support locally, as detailed in the table below.

Post	Male	Female	Full-time	Part-time	Total
Bangkok	1	2	3	0	3
Beijing	1	1	2	0	2
Hanoi	2	2	3	1	4
Jakarta	2	2	4	0	4
Manila	1	2	3	0	3
New Delhi	1	2	3	0	3
Port Moresby	0	2	2	0	2
Total	8	13	20	1	21

ACIAR EEO data by classification at 30 June 2007 (all based in Canberra)

(includes non-ongoing staff but excludes inoperative staff)

Classification	M	F	NESB1	NESB2	ATSI	PWD	Total
Director	1	0	0	0	0	0	1
Chief of Division Grade 1	1	0	0	0	0	0	1
Executive Level 2 (Senior Principal Research Scientist)	12	0	3*	0	0	0	12
Executive Level 2 (other)	1	1	0	0	0	0	2
Executive Level 1	2	3	0	0	0	2*	5
APS L6	0	4	1*	1*	0	0	4
APS L5	1	5	2*	0	0	0	6
APS L4	3	10	0	1*	0	1*	13
APS L3	1	2	0	0	0	0	3
APS L2	0	1	0	0	0	0	1
Total	22	26	6*	2*	0	3*	48

**not included in total adding across to final column*

EEO abbreviations:
NESB 1: Non-English speaking background, first generation; NESB 2=Non-English speaking background, second generation
ATSI: Aboriginal and Torres Strait Islander peoples
PWD: People with disabilities

ACIAR classification structure and salary rates
Research program manager structure

APS Classification	ACIAR Local Designations and Salary			# staff by classification	Ongoing/ Non-ongoing	Male/ Female
EL 2 RPM Band	SPRS	Research Program Manager/Senior Principal Research Scientist	126,690	12	2 10	12 0
			123,190			
			119,689			
			116,191			
			112,690			
	PRS	Research Program Manager/ Principal Research Scientist	109,935			
			106,994			
			104,050			
			101,110			
	SRS	Research Program Manager/Senior Research Scientist	98,170			
			96,191			
			94,210			
			92,229			
			90,250			

Breakdown of ACIAR employees by broadband

ACIAR Broadband	APS Classification	ACIAR Local Designations and Salary			# staff by classification	Ongoing/ Non-ongoing	Male/ Female
		EL2	Unit Manager 2	91,866 88,459 85,055 81,650 78,246	2	2 0	1 1
	EL 1	EL1	Unit Manager 1	75,863 73,994 72,125 70,256	5	5 0	2 3
Band 2	APS 6	APS 6	APS 6	62,953 60,914 58,878 56,840 54,803	4	3 1	0 4
	APS 5	APS 5	APS 5	53,803 52,785 51,762 50,741	6	6 0	1 5
	APS 4	APS 4	APS 4	49,395 48,094 46,794 45,492	13	12 1	3 10
Band 1	APS 3	APS 3	APS 3	44,055 42,976 41,895 40,817	3	1 2	1 2
	APS 2	APS 2	APS 2	39,739 38,438 37,137 35,836	1	0 1	0 1
	APS 1	APS 1	APS 1	34,998 33,886 32,777 31,667	No employees at this classification		

Appendix 6: Freedom of Information

The *Freedom of Information Act 1982* (FOI Act) gives individuals a means to obtain access to Government-held documents, excluding those where exemptions are in place. Government departments and agencies have reporting responsibilities under the FOI Act, in relation to FOI requests. The following statement is made in accordance with Section 8 of the Act.

ACIAR received no requests in 2006–07 regarding the supply of documents or information as prescribed under the provisions of the FOI Act. No requests are outstanding.

ACIAR received no requests, made with reference to the FOI Act, for publications produced by the Centre. The requirements of the *Privacy Act 1988* are abided by in the collection of requests for available publications and in relation to its website.

Administration of the FOI Act

Responsibility for determinations relating to the granting, withholding or deferring of access to particular documents rests with ACIAR. The Central Office of the Department of Foreign Affairs and Trade assists ACIAR in administering FOI. Returns to the Attorney General's Department are coordinated and prepared through the Centre.

ACIAR's Canberra headquarters and some overseas posts hold documents, with many pre-1990 documents being held in archival custody. These may be obtained under the *Archives Act 1983*.

Public access

No documents are held by ACIAR that are open to the public through a public register or otherwise. Publications, including scientific publications of ACIAR-supported research, can be inspected and copies obtained from the Centre's office, with many also available electronically through the ACIAR website (www.aciar.gov.au). A number of other documents are freely available online in accordance with the Government Online initiative.

Freely available documents that may be requested, and increasingly are available through the ACIAR website, include research-related publications, information sheets on projects, scientific project working papers, the annual report, *Partners in Research for Development* magazine, and brochures and fact sheets relating to ACIAR activities.

Inquiries concerning access to documents or other FOI matters should be directed to:

Chief Executive Officer
Australian Centre for International Agricultural Research
GPO Box 1571
Canberra ACT 2601
Telephone: 02 6217 0500
Facsimile: 02 6217 0501
Email: aciar@aciar.gov.au

Organisation, functions and powers

ACIAR's organisation, functions and powers are included in Appendix 1 of this report.

Outside participation

When setting research priorities, ACIAR consults stakeholders both within and outside Australia through formal and informal communication. Project development processes include opportunities for discussion and inputs from a range of scientists and related organisations, such as universities, departments of agriculture and natural resource management, and other research providers.

The Centre's Policy Advisory Council provides a formal mechanism through which feedback from Australian and international stakeholders can be provided. The Council acts as an advisory body to the Minister for Foreign Affairs and meets once a year. The Directors of ACIAR and AusAID sit on the Council as ex-officio members.

Categories	Document types
General	• Cables, minutes, memoranda, file notes and other documents concerning international agricultural research activities and projects • Working files with submissions, reports and correspondence on program and project administration, appointment of members to the Policy Advisory Council and Board of Management, and Centre management • Submissions to portfolio Ministers, the Director and senior officers • Ministerial and agency correspondence • Speeches and press statements on international agricultural research in the aid program • Computer disk storage of statistical and other information material
Major policy and procedural documents	• Agenda papers for, and minutes of, meetings of the Board of Management and Policy Advisory Council • Proposals for ACIAR research projects and records of decisions made in-house and by the Board of Management in respect to such proposals • Documents for the development, evaluation, administration and outcomes of ACIAR's research projects • Documents for the administration of ACIAR fellowship schemes • Policy documents and submissions relating to the aid program and scientific research issues • Memoranda of understanding, exchanges of letters and other agreements with foreign governments, and agreements with Australian institutions, relating to international agricultural research activities • Briefs for Australian delegations and Ministers proceeding overseas
Parliamentary matters	• Briefings for Ministers on possible parliamentary questions • Records of appearances by ACIAR officers before the JSCFADT and other parliamentary committees
Management policies and procedures	• Documents on human resource management and personnel policy and practices, including recruitment, staff development, counseling, performance management, workplace diversity, OH&S, workplace relations and collective agreements • Documents relating to financial administration and services, including estimates, financial and accounting operations, procurement, contractors, information technology, debtors and payment of claims in Australia and overseas • Documents relating to strategic and corporate planning

Appendix 7: Ecologically sustainable development and environmental performance

The principles of ecologically sustainable development (ESD) are outlined in the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* (section 3A). These principles underpin ACIAR's activities in meeting its obligations as specified under section 160 of the EPBC Act. The following report is provided in accordance with section 516A of the Act.

How the activities of the organisation, and the administration of legislation by the organisation, accord with the principles of ESD (s516A (6)(a))

ACIAR's guidelines for project development include triggers to ensure that any projects developed which result in significant environmental impacts follow all due processes under the EPBC Act. Organisations developing projects, either as the commissioned (lead) agency or as a collaborator, must fulfill all relevant obligations under the EPBC Act. All obligations under international arrangements to which Australia is a signatory (for example the Convention on Biological Diversity) must also be fulfilled. Processes for commissioned organisations, and where relevant collaborating organisations, when completing project proposal proformas, include:

- documentation of possible negative environmental outcomes from a project, within the context of Environment Australia's EPBC Administrative Guidelines on Significance (EPBC Guidelines)
- where such outcomes may exist, project proponents must demonstrate that all relevant EPBC obligations have been fulfilled
- all relevant obligations under international arrangements to which Australia is a signatory, specifically for biological resources, must have been met and properly documented
- letters of approval relating to the use of experimental animals and/or GMOs must be provided, along with five letters confirming compliance with regulations relating to germplasm transfer, quarantine requirements, biosafety, etc.

Project proposals that pass these processes and meet obligations are then subject to the following:

- in-house assessment by the relevant Research Program Manager (RPM). This determines if environmental impacts outlined in the proposal (having reference to, amongst other documents, the EPBC Guidelines) require action. If informal consultation with the EPBC Referrals Unit is required, RPMs are empowered to seek and document whether potential impacts are sufficient to warrant a formal referral through the Department of Environment and Heritage (DEH).
- examination by ACIAR's formal In-House Review (IHR), to assess all aspects and recommend their approval. At this point a recommendation to contact DEH to consult on potential impacts, either formally or informally, may be made. Such recommendations must then be actioned and signed off.
- formal approval by the Chief Executive Officer (CEO), after projects have been considered by IHR. The CEO may seek further information on environmental impacts by referring the project back to management.

Training activities, both within projects and also through targeted short courses, help equip partner-country researchers with both the means and the mindset to aim for sustainability, and this is reinforced through project implementation.

How outcomes in a relevant Appropriations Act contribute to ESD (s516A(6)(b))

Section 5 of the ACIAR Act outlines the mandate and functions of the Centre. This includes the formulation of policies to deliver

against this mandate. Agricultural research is linked explicitly with sustainability. The link is maintained and implemented in key planning documents—the 2007–12 Corporate Plan and the Annual Operational Plan. At the operational level, project development, evaluation and monitoring delivers on this mandate. ACIAR recognises through its Corporate Plan the following trends in its operating environment:

- an increasing emphasis on livelihood improvement and ecologically sustainable development
- the potential for climate change to adversely impact on terrestrial and coastal agriculture and natural systems.

The strategic need to respond to these factors by aligning the research program with Australian Government priorities, including the principles of ESD established under the EPBC Act, runs through the Corporate Plan. The Centre's Annual Operational Plans outline relevant research priorities that encourage more productive and sustainable agriculture in developing countries and Australia. Where and how these outcomes and activities coincide with the National Research Priorities is included in this report.

Effect of the organisation's activities on the environment (s516A(6)(c))

Examples of projects with environmental benefits include:

- **Fisheries**—sustainable management of marine species, including migratory tuna in the Pacific, sea cucumber in Solomon Islands, Indonesian tuna fisheries and sharks and rays in the Indian Ocean; cross-country fisheries resource management; planning tools for environmentally sustainable tropical finfish cage culturing in Indonesia and Australia; a suite of projects developing sustainable aquaculture technologies to minimise wild capture and harvest.
- **Land and Water Resources**—developing new approaches to managing and alleviating the affects of salinity and soil acidification; investigating water allocation and management strategies, including seasonal climate forecasting; assessing land suitability, crop diversification and constraints on the system; minimising pollutants in waterways in the Philippines; assessing the impacts of re-vegetation programs in China, Indonesia and Australia; developing and promoting new cropping systems for conservation agriculture.
- **Agricultural Systems Economics and Development Policy**—examining policy and institutional frameworks and their impacts on water management in China and Vietnam; bridging the gap between seasonal climate forecasts and decision-makers in the Philippines; sustainable management of plantations in PNG; minimising the use of herbicides through the development and dissemination of alternative weed management strategies in the Philippines.
- **Forestry**—improvements in breeding technologies for Australian species, such as eucalypts and acacias, widely utilised for forestry plantations in Australia and parts of Asia; enhancing disease and pest surveillance methodologies and management; improving germplasm usage and management in PNG and elsewhere; and assessing the impacts of, and benefits arising from community–industry partnerships when engaging in plantation forestry.
- **Crop Improvement and Pest Management**—improving productivity and sustainability in farming systems through crop diversification and the use of alternative cropping methods that minimise soil disturbance and erosion; developing control and management strategies for weeds and pests threatening crop species in Asia and the Pacific, which potentially threaten Australia; the collection and conservation of unique crop and legume germplasm; and improved breeding and cropping technologies for foods.

ACIAR projects target research to address problems in developing countries that may also yield results applicable to environmental management in Australia. Such benefits are either a secondary objective or are the result of research having application within Australian settings.

Measures being taken by ACIAR to minimise the impact of its activities on the environment (s516A(6)(d))

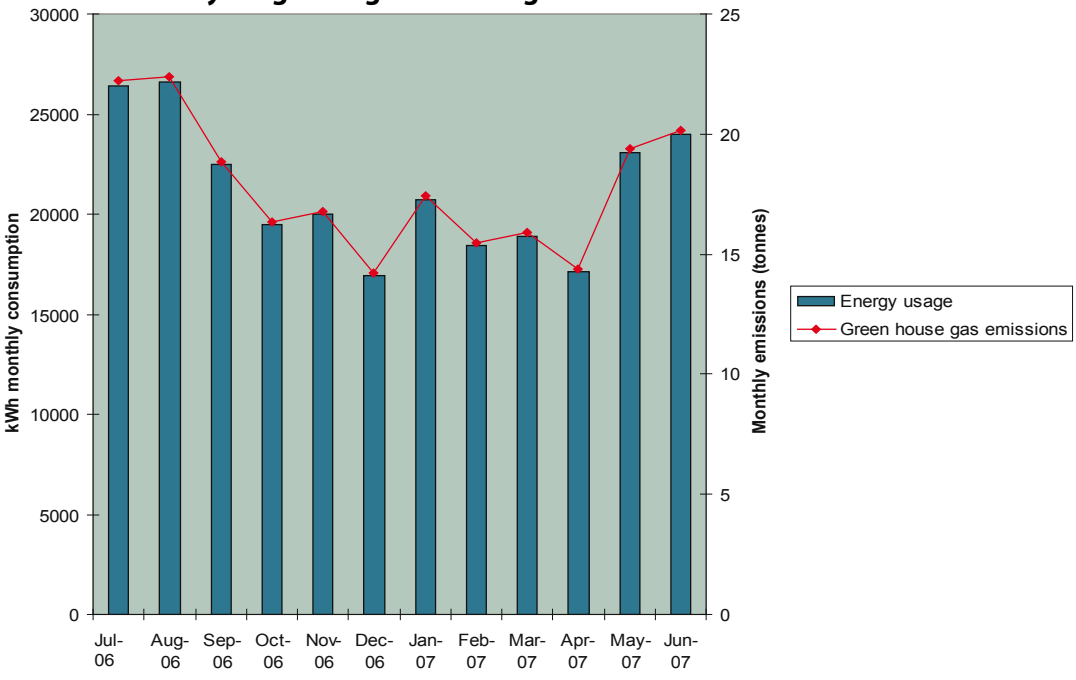
Rather than implement a formal Environmental Management System ACIAR has chosen to adopt an informal system for managing environmental impacts. The decision to utilise an informal system, built upon the EMS framework initially circulated to Government departments and agencies, was taken due to the Centre's size and the most cost-effective approach available. By utilising the 'initial environmental review', a plan of action and subsequent follow-up actions were developed and implemented. The framework has been used to ensure environmental performance within ACIAR's Canberra premises is as effective as possible.

As the sole building tenant ACIAR is responsible for the management of all infrastructure and implementation of policies to deliver sound environmental management at its Canberra premises. Like all government agencies and departments, daily operations generate waste and consume electricity, water and materials. Within this context environmental management goals are as follows:

Resource	Target for 2008–09/compared with 2005–06
Energy	Reduction in energy consumption of light and power by 15%
Waste	Reduction in waste going to landfill by 90%
Water	Reduction in water consumption by 10%
Materials	Reduction in paper usage (reams) by 20%

Resource	Usage		Target
	2005–06	2006–07	2008–09
Energy (kilowatt hours)	292,391	252,653	250,000
Water (kilolitres)	1,333	633	500
Paper (reams)	1080	1015	880

ACIAR electricity usage and greenhouse gas emissions



Mechanisms, if any, for reviewing and increasing the effectiveness of these measures (s516A(6)(e))

Formal reporting guidelines on environmental management and associated activities are used for an internal review of environment management processes. These include:

- *National Government waste reduction and purchasing guidelines (2004)*
- *Environmental Purchasing Guide (2004)*
- *Environmental Purchasing Checklist (2004)*
- *Energy Use in Commonwealth Operations (annual publication)*
- *ANAO Green Office Procurement Survey.*

Specific activities undertaken in 2006–07 along with their returns include:

- **Energy**—regular monitoring for tenant use (light and power) and central services (air conditioning and mechanical devices) has shown a reduction in kilowatt hours consumed. This was achieved through implementation of energy conservation measures, including encouraging staff to switch off lights and computers, and installing CBUS, which switches off lighting outside working hours. Abnormal usage patterns for the air conditioning and other mechanical devices are investigated immediately, allowing prompt action.

  ACIAR's energy usage in 2006–07 (electricity is used, no natural gas or other fuels are used) was 252,653 kilowatt hours (kwh), compared to 292,391 kwh in 2005–06. Electricity consumption comprises tenant usage (light and power) and central services (air conditioning and other mechanical devices). Ten percent of the electricity consumed is purchased through ACTEW's Green Power initiative, with the premium for purchasing green power used to fund the development of environmentally friendly energy options.

- **Water**—new water conservation strategies, combined with the introduction of stage three water restrictions in ACT, has resulted in a reduction of 47% in water consumption. In 2006–07 633 kilolitres were consumed, compared to 1,333 kilolitres in 2005–06.

  ACIAR had previously converted garden areas surrounding its building to low water-use plants, with minimal drip irrigation, monitored by a central timer. To support further water conservation ACIAR is in the process of finalising the installation of water tanks to store rainwater. These will be used mainly for irrigation purposes, reducing irrigation from mains supply.

- **Material**—ACIAR has set itself a goal of reducing paper use by 20%. Recycled paper (using 80% recycled material) now accounts for 95% of all paper purchases, helping ACIAR meet the goal of a 20% reduction in paper use. Upgrades to printers and photocopiers have supported this through improved energy efficiency ratings and double-sided capacities.

  Double-sided printing and photocopying have been set as default settings on high-use printers and copiers. A number of corporate documents, including drafts and daily press clippings are circulated electronically through an internal portal (intranet site). These policies have seen paper use lowered from 1,080 reams in 2005–06 to 1,015 reams during 2006–07.

- **Waste**—recycling is in place for all paper, steel cans, glass, plastic, toner cartridges and rechargeable batteries. All are now disposed of either by accredited suppliers or by staff to appropriate recycling facilities. Waste disposal to landfills has been reduced by 50% with further reductions planned for 2008.

  The disposal of waste materials including paper and toner cartridge, is undertaken by two professional waste management companies, engaged to ensure the correct disposal for recycling. In addition, cardboard is disposed of at accredited waste recyclers.

Appendix 8: Compliance checklist

Part of Report	Description	Description	Page
	Letter of transmittal	Mandatory	3
	Table of contents	Mandatory	4
	Index	Mandatory	232
	Glossary	Mandatory	230
	Contact officer(s)	Mandatory	ifc*
	Internet home page address and internet address for report	Mandatory	ifc*
Review by Chief Executive Officer	Review by Chief Executive Officer	Mandatory	10-12
	Summary of significant issues and developments	Suggested	7
	Overview of ACIAR's performance and financial results	Suggested	6-12
	Outlook for following year	Suggested	12
	Significant issues and developments—portfolio	Portfolio departments—suggested	n/a
ACIAR Overview	Overview description	Mandatory	15-119
	Role and functions	Mandatory	197-198
	Organisational structure	Mandatory	199
	Outcome and output structure	Mandatory	200
	Where outcome and output structures differ from PBS format, details of variation and reasons for change	Mandatory	n/a
	Portfolio structure	Portfolio departments—mandatory	n/a
Report on Performance	Review of performance during the year in relation to outputs and contribution to outcomes	Mandatory	201
	Actual performance in relation to performance targets set out in PBS/PAES	Mandatory	179-180
	Performance of purchaser/provider arrangements	If applicable, mandatory	n/a
	Where performance targets differ from the PBS/PAES, details of both former and new targets, and reasons for the change	Mandatory	179-180
	Narrative discussion and analysis of performance	Mandatory	15-119
	Trend information	Suggested	6
	Factors, events or trends influencing departmental performance	Suggested	10-12
	Significant changes in nature of principal functions/services	Suggested	n/a

** Inside front cover*

Part of Report	Description	Description	Page
	Performance against service charter customer service standards, complaints data, and the department's response to complaints	If applicable, mandatory	n/a
	Social justice and equity impacts	Suggested	n/a
	Discussion and analysis of the department's financial performance	Mandatory	132-133
	Discussion of any significant changes from the prior year or from budget	Suggested	n/a
	Summary resource tables by outcomes	Mandatory	201
	Developments since the end of the financial year that have affected or may significantly affect the department's operations or financial results in future	If applicable, mandatory	121
Management Accountability			
Corporate Governance	Statement of the main corporate governance practices in place	Mandatory	122-126
	Names of the senior executive and their responsibilities	Suggested	234
	Senior management committees and their roles	Suggested	127
	Corporate and operational planning and associated performance reporting and review	Suggested	15-119 169-187
	Approach adopted to identifying areas of significant financial or operational risk and arrangements in place to manage risks	Suggested	127
	Agency heads are required to certify that their agency comply with the Commonwealth Fraud Control Guidelines.	Mandatory	126-127
	Policy and practices on the establishment and maintenance of appropriate ethical standards	Suggested	124
	How nature and amount of remuneration for SES officers is determined	Suggested	125
External Scrutiny	Significant developments in external scrutiny	Mandatory	193
	Judicial decisions and decisions of administrative tribunals	Mandatory	193
	Reports by the Auditor-General, a Parliamentary Committee or the Commonwealth Ombudsman	Mandatory	193
Management of Human Resources	Assessment of effectiveness in managing and developing human resources to achieve departmental objectives	Mandatory	189-192
	Workforce planning, staff turnover and retention	Suggested	189-192 /218
	Impact and features of certified agreements and AWAs	Suggested	192
	Training and development undertaken and its impact	Suggested	189
	Occupational health and safety performance	Suggested	190
	Productivity gains	Suggested	192
	Statistics on staffing	Mandatory	218-220
	Certified agreements and AWAs	Mandatory	192/218
	Performance pay	Mandatory	190

Part of Report	Description	Description	Page
Assets management	Assessment of effectiveness of assets management	If applicable, mandatory	n/a
Purchasing	Assessment of purchasing against core policies and principles	Mandatory	193
Consultants	The annual report must include a summary statement detailing the number of new consultancy services contracts let during the year; the total actual expenditure on all new consultancy contracts let during the year (inclusive of GST); the number of ongoing consultancy contracts that were active in the reporting year; and the total actual expenditure in the reporting year on the ongoing consultancy contracts (inclusive of GST). The annual report must include a statement noting that information on contracts and consultancies is available through the AusTender website.(Additional information as in Attachment D to be available on the internet or published as an appendix to the report. Information must be presented in accordance with the proforma as set out in Attachment D.)	Mandatory	194-195
Competitive Tendering and Contracting	Absence of provisions in CTC contracts allowing access by the Auditor-General	Mandatory	194
Exempt contracts	Contracts exempt from the AusTender	Mandatory	193
Commonwealth Disability Strategy	Report on performance in implementing the Commonwealth Disability Strategy	Mandatory	190
Financial Statements	Financial Statements	Mandatory	135-168
Other Information			
	Occupational Health and Safety (section 74 of the Occupational Health and Safety (Commonwealth Employment) Act 1991)	Mandatory	190
	Freedom of Information (subsection 8(1) of the Freedom of Information Act 1982)	Mandatory	221-222
	Advertising and Market Research (Section 311A of the Commonwealth Electoral Act 1918)	Mandatory	194
	Ecologically sustainable development and environmental performance (Section 516A of the Environment Protection and Biodiversity Conservation Act 1999)	Mandatory	223-226
Other	Discretionary Grants	Mandatory	194
	Correction of material errors in previous annual report	If applicable, mandatory	n/a

List of Acronyms and Abbreviations

ACIAR	Australian Centre for International Agricultural Research
ADB	Asian Development Bank
AIPRD	Australia Indonesia Partnership for Reconstruction and Development
ANAO	Australian National Audit Office
AOP	Annual Operational Plan (of ACIAR)
APEC	Asia–Pacific Economic Cooperation
APS	Australian Public Service
ASLP	Australia–Pakistan Agriculture Linkages Program
ATSE	Academy of Technological Sciences and Engineering (Australia)
ATSI	Aboriginal and Torres Strait Islander peoples
AusAID	Australian Agency for International Development
AVRDC	The World Vegetable Center (Taiwan)
CABI	Centre for Agriculture and Biosciences International (UK)
CARD	Collaboration for Agriculture and Rural Development (Vietnam)
CARDI	Cambodian Agricultural Research and Development Institute
CATP	Community Agricultural Technologies Program (Philippines)
CDS	Commonwealth Disability Strategy
CEO	Chief Executive Officer
CGIAR	Consultative Group on International Agricultural Research
CIAT	International Center for Tropical Agriculture (Colombia)
CIFOR	Center for International Forestry Research (Indonesia)
CIMMYT	International Maize and Wheat Improvement Center (Mexico)
CIP	International Potato Center (Peru)
CPGs	Commonwealth Procurement Guidelines
CSF	classical swine fever
CSIRO	Commonwealth Scientific and Industrial Research Organisation (Australia)

DAFF	Department of Agriculture, Fisheries and Forestry (Australia)
DEH	Department of Environment and Heritage (Australia)
DEST	Department of Education, Science and Training (Australia)
DFAT	Department of Foreign Affairs and Trade (Australia)
DNA	deoxyribonucleic acid (genetic material)
EEO	equal employment opportunity
ELISA	enzyme linked immunosorbent assay
EPBC	Environment Protection and Biodiversity Conservation (Act)
ESD	Ecologically Sustainable Development
FAO	Food and Agriculture Organisation (of the United Nations)
FMA (Act)	Financial Management and Accountability (Act 1997)
FMD	foot-and-mouth disease
FOI	Freedom of Information
FTE	full-time equivalent (staff)
GDP	Gross Domestic Product
GMO	Genetically Modified Organism
GST	Goods and Services Tax (Australia)
ha	hectare
HPAI	Highly pathogenic avian influenza
IARCs	International Agricultural Research Centres
IAS	Impact Assessment Series (of ACIAR)
IAU	Impact Assessment Unit (ACIAR program)
ICAR	Indian Council of Agricultural Research
ICARDA	International Center for Agricultural Research in the Dry Areas (Syria)
ICM	Integrated Crop Management
ICRAF	World Agroforestry Centre
ICRISAT	International Crops Research Institute for the Semi-arid Tropics (India)
IDM	Integrated Disease Management

IFPRI	International Food Policy Research Institute (USA)
IHR	In-House Review (ACIAR)
ILRI	International Livestock Research Institute (Kenya)
IPGRI	International Plant Genetic Resources Institute (Italy)
IPM	Integrated Pest Management
IRR	Internal Rate of Return
IRRI	International Rice Research Institute (Philippines)
IUU	Illegal, unreported and unregulated (fishing)
IWMI	International Water Management Institute
KPI	key performance indicator
MP	micro-project
NESB	non-English speaking background
NGO	Non-government organisation
NPV	Net Present Value
NRP	National Research Priorities (Australia)
OHS	Occupational health and safety
PGR	Plant Genetic Resources
PIC	Pacific island countries
PM&C	Department of the Prime Minister and Cabinet (Australia)
PWD	People with disabilities (EEO classification)
PNG	Papua New Guinea
R&D	Research and Development
RPM	Research Program Manager (ACIAR)
RSA	Republic of South Africa
SADI	Smallholder Agribusiness Development Initiative (Indonesia)
SES	Senior Executive Service (of APS)
SPC	Secretariat of the Pacific Community
SPS	Sanitary and Phytosanitary
USP	University of the South Pacific
White Paper	White Paper on the Australian Government's Overseas Aid Program, April 2006
WTO	World Trade Organization

ACIAR Research Program Acronyms

ADP	Agricultural Development Policy
AGB	Agribusiness
ASEM	Agricultural Systems Economics and Management
AH	Animal Health
CIM	Crop Improvement and Management
CP	Crop Protection
FIS	Fisheries
FST	Forestry
HORT	Horticulture
LPS	Livestock Production Systems
LWR	Land and Water Resources
PLIA	Policy Linkages and Impact Assessment
SMCN	Soil Management and Crop Nutrition

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ACIAR—Part of the Australian Aid Program

ACIAR forms part of the Australian Government's overseas aid program and works towards the aid program's objective of assisting developing countries to reduce poverty and achieve sustainable development in line with Australia's national interest. The aid program is guided by four priorities: accelerating ecomonic growth; fostering functioning and effective states; investing in people; and promoting regional stability and cooperation.

ACIAR works collaboratively with AusAID in areas of mutual priority, with both organisations contributing to the whole-of-Government emphases of the aid program.

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Research that works