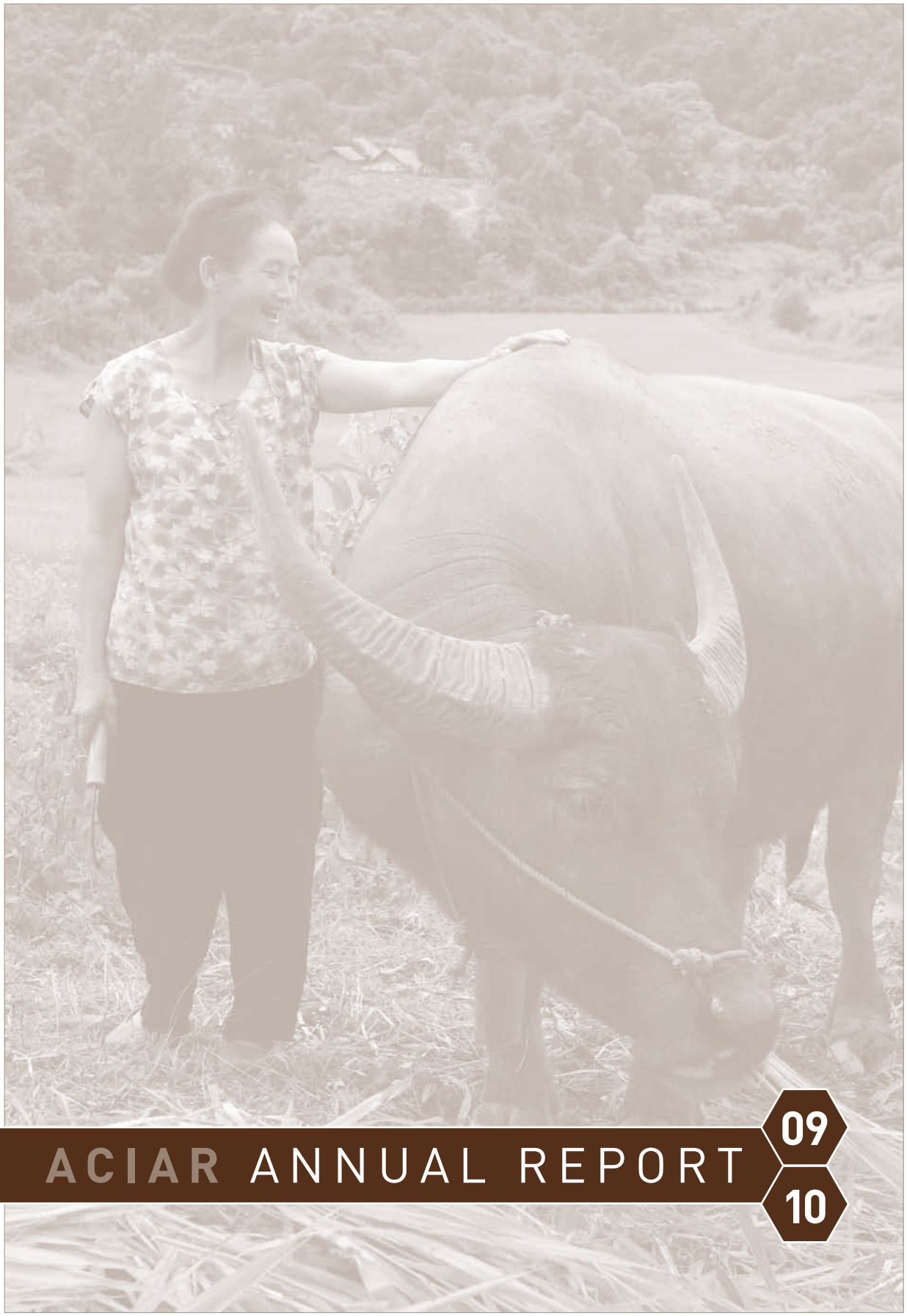
Australian Government

Australian Centre for
International Agricultural Research

ACIAR ANNUAL REPORT 09 10



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ACIAR Annual Report 2009–10

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GPO Box 1571, Canberra ACT 2601, Australia
Telephone: + 61 2 6217 0500
Email: aciar@aciar.gov.au

Executive Editors
Warren Page, Manager, Communications and Public Affairs
Georgina Hickey, Publications Manager

Distribution
This report is available through the ACIAR website (aciar.gov.au) or by contacting ACIAR (details below) to request a hard copy.

Contact officer
Lisa Wright, Director Corporate
GPO Box 1571, Canberra ACT 2601, Australia
Telephone: + 61 2 6217 0500
Fax: + 61 2 6217 0501
Email: aciar@aciar.gov.au
Website: <aciar.gov.au>
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Australian Government
Australian Centre for International Agricultural Research

GPO Box 1571
Canberra ACT 2601
AUSTRALIA

The Hon Kevin Rudd MP
Minister for Foreign Affairs

Dear Minister

ACIAR Annual Report 2009–10

It is my pleasure as the Chief Executive Officer to present to you the Annual Report of the Australian Centre for International Agricultural Research for the year ended 30 June 2010.

The report has been prepared in accordance with section 39 of our enabling legislation—*Australian Centre for International Agricultural Research Act 1982*, as amended.

Consistent with section 49 of the *Financial Management and Accountability Act 1997*, I have taken steps to ensure that the annual financial statements have been prepared in accordance with the Finance Minister's Orders. The report includes the Centre's audited financial statements, certified by the Australian National Audit Office, as required by section 57 of the *Financial Management and Accountability Act 1997*.

In presenting the Annual Report, I acknowledge the important contribution made by ACIAR's staff and commissioned research organisations in achieving more-productive and sustainable agricultural systems for the benefit of developing countries and Australia through international agricultural research partnerships.

Yours sincerely

Dr Nick Austin
Chief Executive Officer
ACIAR
October 2010

ACIAR
Research that works for developing countries and Australia

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HIGHLIGHTS

About ACIAR

The Australian Centre for International Agricultural Research (ACIAR; the Centre) forms part of the Australian Government's international development assistance 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 core principles of the aid program are:

- accelerating progress towards the Millennium Development Goals
- a recognition that, while economic growth is the most powerful long-term solution to poverty, it will not, by itself, deliver fair and stable societies
- a strong emphasis on the Asia–Pacific region, while also increasing our efforts in Africa and South Asia
- an emphasis on the power of education to promote development
- a commitment to continue to improve effectiveness.

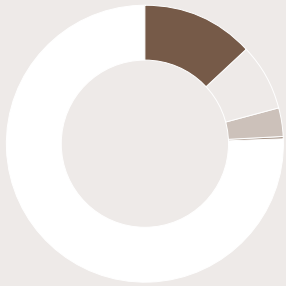
ACIAR works collaboratively with the Australian Agency for International Development (AusAID) in areas of mutual priority, with both organisations contributing to the whole-of-government emphases of the aid program. The Centre encourages Australia's agricultural scientists to use their skills for the benefit of developing countries and Australia. ACIAR funds research projects that are developed within a framework that reflects the priorities of Australia's aid program and national research strengths, together with the agricultural research and development priorities of partner countries.

Highlights in 2009–10 were:

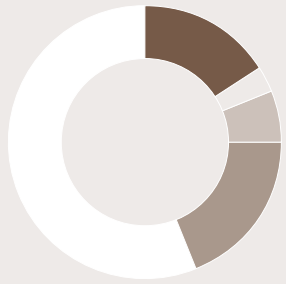
- The European Union is funding building of a canarium nut processing plant in Papua New Guinea to further ACIAR-funded research that proved the viability of the industry.
- Research to improve production of sandalwood and whitewood trees has accelerated the evolution of fledgling industries for both species in Vanuatu.
- Use of cattle feed supplements in Indonesia's West Timor province has been demonstrated to reduce calf mortality from 30% to just 3%.
- ACIAR research to develop fish catch monitoring in Indonesia's Indian Ocean ports has led the Government of Indonesia to establish a formal catch-observer plan.
- A biofertiliser developed with ACIAR research support has proven to lift rice yields in Vietnam by between 10% and 20%.
- Expansion of commercial-scale oyster aquaculture in Vietnam, underpinned by ACIAR-supported research, is expected to reach 400 hectares.
- Use of bamboo–plastic structures in the Philippines to shelter vegetables has proven to lift yields up to five times, and allows growing of selected species that fail to yield outdoors.
- The Landcare Foundation of the Philippines granted an extension to its UN Development Programme Act for Peace program, building on past ACIAR-funded research.
- Since research began in 2005, 114 of East Timor's 442 village districts have seen improvements in food security as a result of seed dissemination and field trials funded by the joint ACIAR–AusAID Seeds of Life program.

- Adoption of recommended feeding practices for cattle in Cambodia across a 4-month forage feeding period doubled the value of animals from US$200 to US$400 per head.
- The use of planted forage species suitable for cattle in Cambodia and Lao PDR saves 2–8 hours each day in collecting feed from the wild, a task often undertaken by children.
- Planting and establishment systems using direct seeding of rice were demonstrated at 581 farmer sites across three Indian states, providing an alternative to traditional labour intensive hand-transplanting systems.
- Adaptation of farm management practices to overcome specific constraints and better utilise available resources has achieved wheat yields of 3.0–4.5 t/ha compared with 2.5 t/ha when wheat was first introduced in the south of Bangladesh.
- 145 developing country scientists spent all or part of 2009–10 studying for postgraduate qualifications at Australian universities under ACIAR-funded scholarships.
- 18,533 hard copy publications of ACIAR research outcomes were distributed, with the ACIAR website visited by 526,378 unique visitors during 2009–10.
- An independent benefit–cost meta-analysis of investments in the International Agricultural Research Centres of the CGIAR revealed that every $1 million invested by the CGIAR in ACIAR's mandate regions produces a return to the developing countries in these regions of between $2.7 million and $3.9 million, with the variance relating to underlying assumptions relating to credible, plausible or potential benefits.

ACIAR expenditure 2009–10



Research expenditure by region



ACIAR administered expenditure overview

	2009–10 AOP[a] budget ($)	2009–10 actual ($)	2008–09 actual ($)	2007–08 actual ($)
Bilateral and multilateral projects by region and country				
Papua New Guinea and Pacific island countries	**10,024,184**	**9,358,076**	**7,864,307**	**8,161,039**
Papua New Guinea	4,874,101	4,504,326	4,704,897	4,964,469
Pacific island countries	5,150,083	4,853,750	3,159,410	3,196,570
South-East Asia	**28,981,868**	**27,465,170**	**24,507,239**	**25,645,122**
Indonesia	11,697,348	11,568,086	11,497,371	11,967,431
Vietnam	3,773,307	3,079,900	2,652,372	2,708,237
Philippines	3,924,530	3,767,325	3,728,893	4,048,844
East Timor	2,198,244	2,517,022	2,603,453	2,790,567
Cambodia	4,427,110	3,301,320	1,788,936	1,867,363
Lao PDR	2,467,077	2,737,638	1,718,050	1,536,408
Thailand	354,335	356,836	377,872	558,710
Burma	139,917	137,043	140,292	167,562
South Asia	**8,869,448**	**7,728,438**	**8,453,522**	**6,199,724**
India	2,970,983	2,923,604	2,792,556	2,825,837
Pakistan	1,024,196	1,289,416	1,960,521	1,942,917
Bangladesh	1,527,713	1,272,181	1,036,971	533,866
Bhutan	167,497	167,496	205,695	206,716
Afghanistan	1,695,476	436,957	623,001	458,251
Iraq	1,483,583	1,588,232	1,784,778	232,137
Other South Asia	0	50,552	50,000	0
North Asia	**1,440,956**	**1,300,000**	**2,080,614**	**2,407,224**
China	1,440,956	1,300,000	2,080,614	2,407,224
Southern and eastern Africa	**375,386**	**2,705,383**	**413,795**	**432,171**
Total project	**49,691,842**	**48,557,067**	**43,319,477**	**42,845,280**
Multilateral program (non-project)	**12,575,000**	**10,599,063**	**5,581,032**	**5,568,343**
Building research capacity	**6,070,000**	**7,067,954**	**7,447,685**	**6,375,429**
Communicating research	**710,000**	**593,250**	**779,809**	**634,968**
Measuring research impacts	**500,000**	**547,301**	**491,853**	**494,734**
Research programs support	**2,065,776**	**2,556,728**	**1,496,215**	**1,320,184**
TOTAL	**71,612,618**	**69,921,363**	**59,116,071**	**57,238,938**

[a] AOP = Annual Operational Plan

Key outcomes

Design and implementation of key initiatives under the Overseas Development Assistance – Food Security through Rural Development initiative:

- **Initiative 1: Safeguarding food security in the rice-based farming systems of South Asia and South-East Asia**

  A project 'Zero-tillage rice establishment and crop–weed dynamics in rice and wheat cropping systems in India and Australia' has screened rice varieties and assessed direct-seeding methods for rice as well as evaluated efficacy of herbicides for direct-seeded rice in rice–wheat systems in India's north-west (Punjab) and east (Bihar).

- **Initiative 2: Helping South Asian and South-East Asian crop and livestock production systems respond to climate change**

  Two new projects commenced—'Developing options to mainstream climate adaptation into farming systems in Cambodia, Laos, Bangladesh and India' and 'Developing multi-scale climate change adaptation strategies for farming communities in Cambodia, Laos, Bangladesh and India'.

- **Initiative 3: Exploiting opportunities for developing high-value agriculture, forestry and fisheries products in the Pacific nations**

  The Pacific Agribusiness Research for Development Initiative (PARDI) is now in the implementation phase; initial opportunities have been identified for high-value agriculture, fisheries and forestry products. Research-for-development (R4D) projects to address these commenced June 2010.

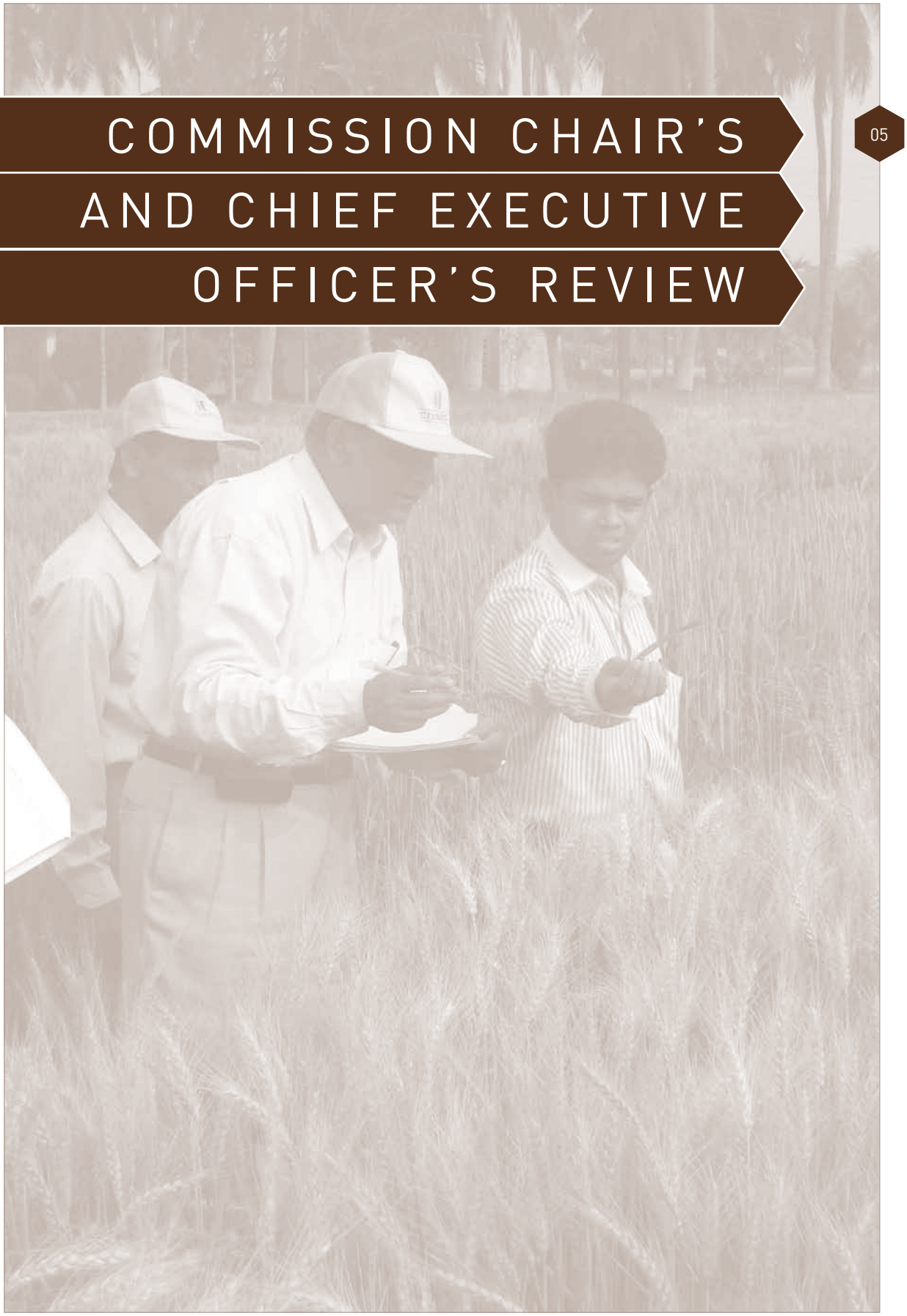
- **Initiative 4: Increasing financial support to the Consultative Group on International Agricultural Research (CGIAR)**

  Active participation with donors and other stakeholders in progressing the extensive CGIAR reform program resulting in institutional changes has been implemented, covering: establishment of a Fund Council including Australian membership, a Consortium Board and constitution, and a monitoring and evaluation framework.

- **Other highlights relating to the Food Security through Rural Development initiative and whole-of-government initiatives include:**

  - implementation of a 4-year project, 'Sustainable intensification of maize–legume cropping systems for food security in eastern and southern Africa', addressing constraints in maize–legume farming systems and associated value chains across five African nations, with commencement of studies and diagnoses of constraints, and initial trials and demonstrations in farmer fields of best-bet varieties and management practices
  - successful completion of ACIAR engagement in the Smallholder Agribusiness Development Initiative (SADI) in Indonesia, through implementation of the Support for Market-Driven Adaptive Research (SMAR) component, which led to a strengthening of province-based agricultural R&D capacity towards a more market- and client-driven environment
  - management of the research and extension component of the Cambodia Agricultural Value Chain (CAVAC) program, with the first farmer field schools established to introduce improved management practices to lift productivity in vegetable growing
  - successful conclusion of Phase 1 of the Australia–Pakistan Agriculture Sector Linkages Program (ASLP) and commencement of designing a 4-year second phase, with an emphasis on furthering dissemination of results and uptake of research outputs and new technologies
  - continued progress of projects in Iraq and Afghanistan addressing constraints in the production of key cereal crops.

COMMISSION CHAIR'S AND CHIEF EXECUTIVE OFFICER'S REVIEW



The past year has been one of significant progress in implementing key Australian Government initiatives relating to food security in the developing world. The success of these achievements has once again confirmed the importance of ACIAR's partnership modality and the value of agricultural research and development as a driver of change and growth in the developing world.

ACIAR's track record of success over the past 12 months and, before that, over much of the past three decades is built on a highly successful partnership model through which ACIAR engages the best of Australian agricultural research expertise to partner with developing-country scientists, facilitating strong and effective collaboration.

This modality has allowed ACIAR to respond to the needs of our partner countries—in addressing research emphases, building R&D capacity and delivering genuine impacts. The commitment of all our partners, in both Australia and developing countries, is matched by the dedication of the Centre's staff.

Food security

Food security has been a focus for much of the developing world, and across and within aid agendas, for many years. The twin crises of the past 3 years—food price spikes and global economic uncertainty—have heightened the focus on feeding the world's poor.

ACIAR has been working in the area of food security since the Centre first began operations in 1982. In the past year our focus has been on consolidating and implementing ACIAR's programs under the Official Development Assistance – Food Security through Rural Development initiative, announced in the 2008–09 Budget. This is a central pillar of Australia's commitment to achieving food security for all, and intersects with the Millennium Development Goals (MDGs), with other ACIAR and AusAID initiatives and projects, and with research agendas into climate change and constraints to agricultural production.

The programs and projects that ACIAR has implemented have productivity enhancement as their central focus. This is in recognition that food security is not only about providing enough food, but is also concerned with income generation driven by productivity and diversification. The flow-on effects of increasing productivity for smallholder farmers, who represent half the world's poor, achieve other outcomes, such as education for children, access to health services and, in many cases, gender equality. Progress in achieving productivity gains and the associated benefits are central to each of the eight MDGs.

Food security initiatives

ACIAR's key programs include the commencement of PARDI, which is supporting the competitiveness of high-value agriculture, fisheries and forestry products in the Pacific region. Key issues to be overcome include isolation from key growth markets and limited coordination of supply chains. Through this program, outcomes that underpin the competitiveness of targeted high-value products will be assessed and developed.

A second major program, 'Sustainable intensification of maize–legume cropping systems for food security in eastern and southern Africa', commenced in Africa. This program builds substantially on completed ACIAR projects and focuses on Ethiopia, Kenya, Malawi, Mozambique and Tanzania. It focuses on maize as the main staple and legumes as an important dietary protein source for the rural poor. Combined rainfed maize–legume cropping systems show considerable promise in boosting productivity and helping reverse the decline in soil fertility that is a fundamental cause of low smallholder productivity in the region.

A third program relates to safeguarding food security in rice-based farming systems in the Mekong region and South Asia. The river deltas of Asia are vital to rice production, but are also highly exposed to climate risks such as increased flooding and seawater intrusion, more extreme weather events and shifts in seasonal weather patterns. The transitory state of farming systems in these

nations further amplifies their extreme vulnerability to climate change. Through this work, strategies that enable policymakers to deliver more-effective climate adaptation programs relevant to farmer livelihoods and food security will be developed. At the same time the scientists will help to build capacity of farming households in selected regions across four countries: India, Bangladesh, Cambodia and Lao PDR.

CGIAR reform

Another initiative to emerge from the Food Security through Rural Development initiative is increased financial support to a reformed CGIAR. The reform process of the CGIAR began in December 2008, with the aim of linking centres through partnerships, and changing the relations between centres and donors. ACIAR has been closely involved in the reform processes, which are moving towards the establishment of mega-programs that would engage the centres in wider partnerships and focus on major global research challenges.

The Australian Government currently contributes around $10 million per year to the CGIAR, with this funding administered by ACIAR. This increased financial support under the Food Security through Rural Development initiative is expected to be linked to specified mega-programs that deliver a significant comparative advantage to identified research needs within Australia's region of influence. It is anticipated that the continued success of the reform process will see Australia's support for the CGIAR rise to a budgeted figure of around $14 million by 2010–13.

To date, the reform process has continued to progress and 15 mega-programs are beginning to take shape and show their potential. The multi-donor CGIAR Fund and Consortium Board are in place, along with a Fund Council to oversee the provision of multi-year financing to the centres through the Consortium Board.

Structural change

In 2009–10 ACIAR underwent some changes in internal structure. The presence of a new Chief Executive Officer (CEO) inevitably brings new ways of looking at an organisation. This, coupled with the move by ACIAR's long-serving Deputy CEO responsible for Research Programs, Dr John Skerritt, to a new position with the Victorian Department of Primary Industries, resulted in a change to ACIAR's organisational structure. It is important to acknowledge here the valuable and important contribution made by Dr Skerritt across a decade at ACIAR, notably in fostering country and regional teams and new program areas, together with the development of offshore research management positions aligned to whole-of-government initiatives such as SADI in Indonesia and CAVAC in Cambodia.

Under the new ACIAR structure four Principal Regional Coordinators were appointed from among ACIAR's Research Program Managers, each with responsibility for overseeing research activities within a region of operations: Papua New Guinea and the Pacific; the Mekong countries; Indonesia, East Timor and the Philippines; and South Asia and Africa.

Two broad program areas were also created: Strategy and Policy—aligning Agricultural Development Policy, Training and Fellowships and Impact Assessment; and a Corporate Program—uniting Finance, Governance, Information Technology, Human Resources and Communications.

The ACIAR Commission is responsible for strategic advice to the Centre and the Minister for Foreign Affairs, and has played an active role in shaping strategies relating to CGIAR reform, the development and implementation of food security and climate change initiatives, and the development of policies on biotechnology and gender equity. The Commission continues to play a leading role in drawing linkages between ACIAR's work and the delivery of community impacts, the MDGs and stakeholder priorities.

The result of ACIAR's structural changes and Commission input is evidenced by the transformation of the Centre's program in the Pacific, re-engagement in eastern and southern Africa, and continued

alignment and integration of cross-disciplinary projects. This continues and strengthens work by the former CEO and Deputy CEO to change ACIAR's project modality to fewer, larger projects that link disciplinary approaches and target areas where poverty persists.

ACIAR's staff have played, and continue to play, a key role in delivering high-quality projects that make a significant difference—through design, implementation and impact—to the lives of many of the poor. Cooperative approaches to project delivery with external partners, notably with AusAID, have been a feature of this collective role. Another key component of this success is continued commitment to the identification and adoption of impact pathways in projects.

Project impacts

Impacts are best demonstrated by example. In East Timor, a pre-project survey of subsistence farmers by researchers working as part of Australia's aid program found that no family of those surveyed had sufficient food staples of rice or maize to last a full year. Seven out of 10 families went without maize for 4 or more months, and all families surveyed were forced to ration food for between 1 and 6 months, each year. Many families reported that they gathered wild food regularly, with the worst affected consuming the seed needed for planting crops the following season.

Australian aid is helping to reverse this situation by introducing crop varieties that are better suited to local growing conditions and yield higher than those varieties currently grown. Working with the centres of the CGIAR, the Australian aid program, through ACIAR, sourced a number of staple crop varieties suited to the agroecological conditions in East Timor.

Since research began in 2005, 114 of East Timor's 442 village districts have seen improvements in food security as a result of seed dissemination and field trials funded by Australia. Interviews with a small group of farmers participating in the project found that more than half had sold, on average, one-third of their increased crop production, the extra income being used to buy rice, protein and other produce to enrich the family diet.

ACIAR's role in East Timor is small but important. We have designed projects that take public good assets, in the form of CGIAR-held seed, and delivered them into farming areas in the country, testing varieties to determine the most successful.

At the same time, we are helping to rebuild the research capacity of both the government and academic sectors, and engaging with the public sector in East Timor, to ensure that it has the infrastructure and capacity to deliver on publicly funded research and development in the future.

This joint AusAID–ACIAR project offers an example of how effectively lives can be changed through the agency of agricultural R&D. It is but one of many projects that contribute to food security, poverty alleviation and sustainable development.

An independent impact assessment conducted into the returns on ACIAR's investment demonstrates how effectively the Centre achieves these outcomes. Analysis of quantitative information from 37 impact assessment studies found that the total cost of investment in these projects is estimated to be around A$234 million in net present value terms (2008 dollars). Of this amount, A$128 million are direct ACIAR costs. The projects generated an estimated total benefit of A$12.6 billion, with the benefits attributable to ACIAR being A$6.8 billion. These results indicate highly successful research. Indeed, the returns on this relatively small sample of projects (worth around 6% of total expenditure since ACIAR's inception in 1982) easily pay for the total cost of ACIAR over 28 years, which is A$2.1 billion in present value terms (2008 dollars).

In addition to estimating quantitative benefits, the study also contains a significant qualitative element that involves drawing evidence on the appropriateness, effectiveness and efficiency of ACIAR's activities. This is presented within the broad context of Australia's aid delivery system, with a particular emphasis on whole-of-government and public-good issues.

The main finding is that ACIAR is an effective and efficient funding agency. Despite its relatively small size in the international aid and research-for-development arena, the Centre performs well in terms of ensuring that the research it invests in meets the needs of its stakeholders, makes a difference to the livelihoods of the poor and aligns within the broader Australian aid program.

ACIAR's projects incorporate adoption pathways, both within individual projects and, where appropriate, as the main focus of a small number of projects. In both cases the key is understanding the challenges and constraints of adoption.

A second example is in South Sulawesi and South-East Sulawesi where ACIAR is working with villagers at either end of the smallholder spectrum.

In Bendewuta village farmers are progressive—they own their own land and farm sizes are large. The contrast with Awolagading and Ujung Tanah villages is stark—farmers are often tenants and those that own land farm very small areas. The result is limited financial and labour resources, with many farmers relying on other employment to supplement farm incomes.

The interventions designed for the contrasting villages cater to these differences. In Bendewuta research and extension is focused on controlling rodent pests and enhancing postharvest management options. In Awolagading and Ujung Tanah labour-saving technologies, such as drum seeders, are prioritised.

Understanding the unique characteristics and challenges is essential to sustainable research outcomes that last beyond the project. In some cases these outcomes are extended through project partnerships.

ACIAR recently published an independent economic assessment of the benefits accruing from a research partnership with World Vision to extend the outcomes of technical research projects to poor farmers in Thailand, Lao PDR and Vietnam. One component of the project aimed at boosting food security and farm incomes for Thai smallholders undertaking fish farming. Community learning centres were established in two areas, and a low-cost fish feed was developed as an alternative to commercial options. Farmers engaged with the project received support with establishment costs and were provided with fingerlings and feed for their first attempt.

The project demonstrated significant benefits in poverty alleviation and food security for participating farm households. Surveys of those participating demonstrated annual income gains of between A$31 and A$158, with the variance depending on the amount of fish retained for home use. These are significant gains for average incomes in these households. The net benefits of the project are estimated at A$6.9 million, with a benefit:cost ratio of 5.1:1.

ACIAR's project mix balances projects with immediate adoption, such as that with World Vision, with projects that may deliver benefits in the longer term. The balance is crucial to sustainability of adoption, both within and beyond the life of the project. ACIAR's unique partnership modality also builds capacity with partner-country stakeholders, transferring skills and ownership of the project outcomes.

Outlook

The challenge that remains is for ACIAR to build on this track record and extend its impact. Through new projects and programs, ACIAR is continuing to extend its reach. Since the May 2009 Budget the Centre has grown, addressing some of the main challenges to a sustainable future—food security, climate change and poverty reduction.

Meeting these challenges will require new approaches, new ways of thinking and a willingness to engage in areas that are outside the mandates of the past. At the heart of this challenge is boosting agricultural production by smallholder farmers—to catalyse economic growth in rural areas through income generation within the largest sector of developing countries, which is agriculture.

In part we are articulating this through engagement with key stakeholders, including presentations to the Outlook Conference of the Australian Bureau of Agricultural and Resource Economics (ABARE) and to the Australian Institute of Agricultural Science and Technology. Such activities promote the value of food security, agricultural research and ACIAR's unique role.

We are examining our project processes and implementation through an internal review. This has delivered a number of improvements to date.

ACIAR is also engaging with key stakeholders at a number of levels. In April we hosted the International Maize and Wheat Improvement Center (CIMMYT) Board of Trustees at a roundtable on food security, bringing together government and scientific expertise. We have also hosted delegations and visits from scientific and political organisations engaged in aid and agriculture. Most notably, ACIAR hosted a visit from the President of Botswana, discussing engagement on a new project. Each of these events has contributed to an increased understanding of the needs and challenges ahead.

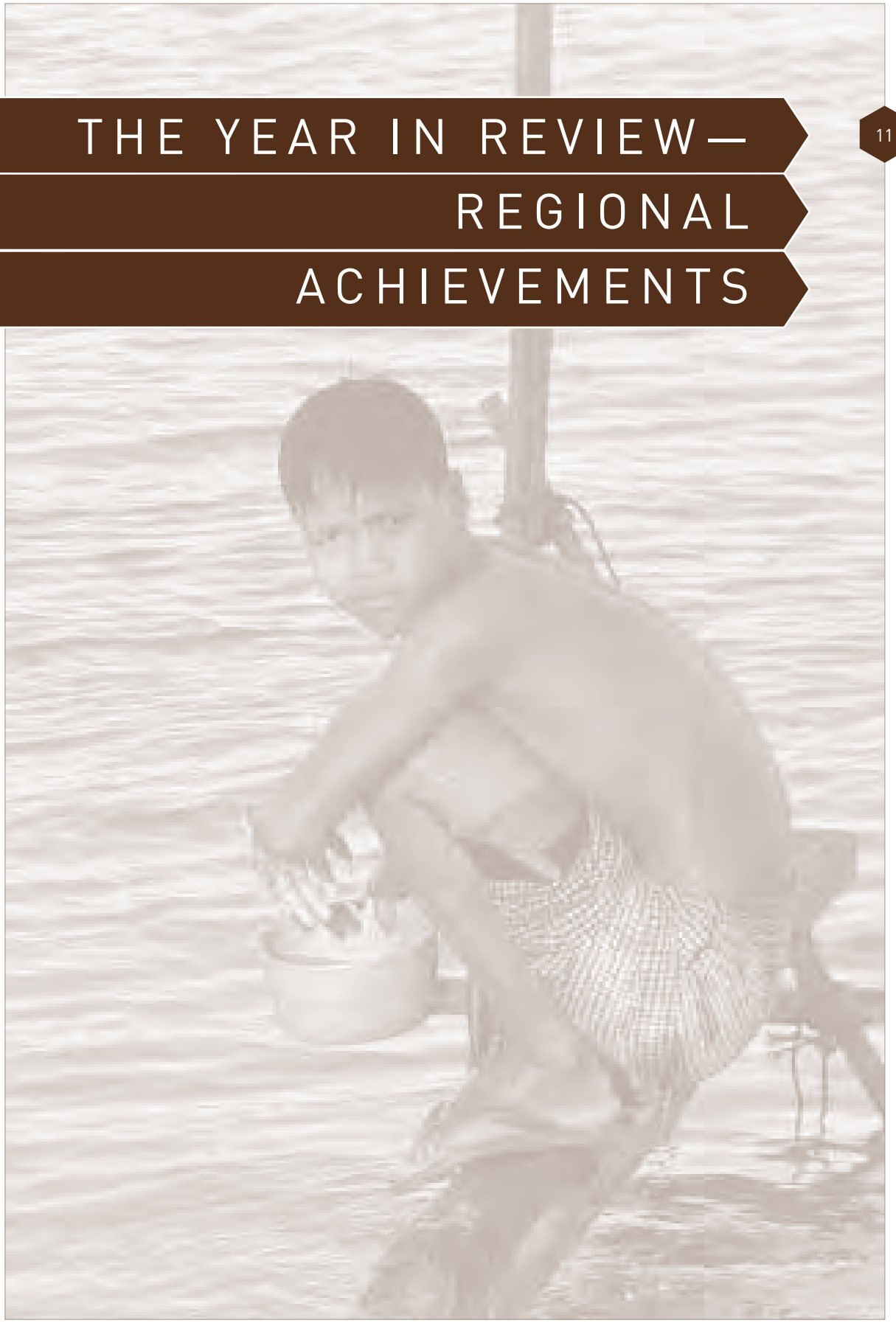
Through the Policy Advisory Council (PAC), ACIAR is also able to tap into the expertise of leaders in the fields of science and development from a number of partner countries as well as Australia. This continues to be a valuable conduit in shaping research emphases.

Our thanks go to all those involved in ACIAR—the Commissioners, members of the PAC, project partners and staff, both here and overseas, for the success of the past year. The sustained quality of our achievements during 2009–10, and across the past 3 decades, is the result of the combined dedication and commitment of the ACIAR team. Through their engagement we continue to make a difference in developing countries.

Dr Meryl Williams
Commission Chair

Dr Nick Austin
Chief Executive Officer

THE YEAR IN REVIEW— REGIONAL ACHIEVEMENTS



PAPUA NEW GUINEA AND PACIFIC ISLAND COUNTRIES

Papua New Guinea

Position

Papua New Guinea (PNG) is one of Australia's most important development partners, and ACIAR's program in PNG reflects this. The country has many challenges to agricultural development, including poorly developed infrastructure, weak market signals and services, pressure on land and renewable resources as a result of population increases, new pest and disease threats and poor product quality.

Village-based agriculture supports over 70% of the population, and domestic trading of fresh produce is a vital source of cash income. By far the most important crop in PNG is sweetpotato, the dominant staple for over 65% of the rural population. The main export tree commodities are timber, oil palm, coffee, cocoa and coconuts.

ACIAR supports the PNG Government's Medium Term Development Strategy 2005–10. Key principles in designing and executing ACIAR's program include engagement with the private sector, industry bodies and non-government organisations (NGOs) along with government. The program consists of research and implementation of these results, research that assists the engagement of smallholders in the cash economy, and studies to understand the social and economic issues affecting farmer decision-making and the factors influencing adoption of new technologies.

The ACIAR program includes tightly linked clusters of projects addressing problems faced by smallholders in producing and marketing the major commodities. The program also focuses on issues of biosecurity and sustainable management of land, forest and fisheries resources, and sustainability of renewable resources. It has a strong emphasis on capacity building, with high priority given to both training within projects and postgraduate training.

AusAID and ACIAR work closely together in PNG. AusAID co-invests in ACIAR-managed project activities, while ACIAR contributes to relevant AusAID programs, particularly the Agricultural Research and Development Support Facility (ARDSF).

Achievements

ACIAR has invested in research in PNG to remove constraints to **women's greater participation in horticulture** and facilitate the development of women's business skills. It is also helping to advance institutional arrangements for the PNG Women in Agriculture (PNG WiA) organisation to assist in the enhancement of women's livelihoods. In March 2010 PNG WiA held its first National Forum for around 100 participants, comprising 73 women from various agricultural groups in PNG and about 30 key partner organisations and stakeholders. Financial and practical support came via AusAID, ACIAR, the National Agricultural Research Systems (NARS) and others. The forum endorsed a new PNG WiA strategic plan.

Another project, studying soil fertility management in the PNG highlands for sweetpotato-based cropping systems, is a component of a **cluster of projects on sweetpotato** implemented in PNG. Working with other projects dealing with different aspects of production, postharvest handling and marketing, has established an effective network, which will function beyond the life of the project. Trials to lift yields through increased soil fertility, mulching and composting, appropriate water management, and testing of best planting times and crop sequences have produced significant lifts in sweetpotato yields. An outreach program is now in place through events such as farmer field days. The farmers are also learning the importance of using clean, virus-free sweetpotato planting materials.

Les Baxter and Gamini Keerthisinghe are shown a palm oil processing factory in West New Britain, Papua New Guinea.

Work to develop commercial sector – smallholder partnerships for **improving incomes in the oil palm and cocoa industries** seeks to improve extension delivery through greater commercial-sector engagement with smallholders, and to develop effective land-use agreements between the commercial sector and customary landowners. In the cocoa industry the cocoa pod borer (CPB) is having a devastating impact on the livelihoods of smallholder growers in East New Britain province, with almost 90% loss of production in areas with high CPB infestation rates. Farmers can manage CPB but they must shift from the low-labour input system of smallholder production to a high-labour input system involving weekly harvesting, regular pruning, shade control and other new practices. Over the past year project staff have worked with an exporting company, NGIP-Agmark, on new extension strategies to help farmers change to high-input farming. This extension strategy has worked and those who have adopted the new system are achieving much higher yields.

Research to improve the **profitability of village broiler production** has found that a diet of sweetpotato plus a low-energy concentrate was suitable for broilers raised in the highlands, while in the lowlands the birds fared better on a diet of cassava with a high-energy concentrate. Year 3 of the project has involved trials to demonstrate the feeding system to village poultry farmers, and the performance of broilers was excellent in all the village farm trials. Birds have reached market weight soon after 5 weeks of age, and the sweetpotato-based diet has compared very favourably with the commercial control diets. Most of the village farmers involved with the trials want to continue using the concentrate mixed with sweetpotato or cassava, and other broiler farmers not involved in the trials are keen to try the diets.

PNG has a need to increase capacity of livestock husbandry and disease management advice. The increasing trend towards a cash economy to fund improvements in living standards and school fees for many livestock owners is placing a greater dependence on livestock for income generation rather than providing food for family or village sustenance. A project is developing reporting systems and tools for livestock owners to assess **management options for endemic and emerging livestock diseases** of pigs and poultry at four sites in PNG. One site on the island of New Britain includes villages that were depopulated of chickens to control a Newcastle disease outbreak in 2006. Data collected from this site using reporting tools introduced in the project, has demonstrated no return of high mortality, and has therefore confirmed the success of the program for eradication of the disease.

Farming fish in ponds is a growing industry in inland areas of PNG. Research has focused on improving the supply of fingerlings to farms, and securing brood-stock and breeding lines at Aiyura in Eastern Highlands province. Farm-based feeds and husbandry for smallholder fish farmers were examined to try to find optimal approaches. Quality assurance principles were used as the scientists sought to **develop a fish-husbandry package**. By the end of the project the number of active farms had increased from 5,400 to more than 15,000. The farm-gate value of the aquaculture industry increased from kina (K) 5 million in 2005 to K20 million in 2008. A spin-off of the project is a team-initiated rehabilitation program based on fish farming for prisoners at Bihute Prison, which is now so well regarded that a request has been received to make this a model for the prison system across PNG.

Canarium indicum nuts are **marketable indigenous products** with great potential to improve the livelihoods of rural households in the South Pacific. There is strong consumer demand and acceptance of the product in PNG, Solomon Islands and Vanuatu, but a major constraint to its commercialisation has been quality of the nuts due to poor postharvest handling and processing techniques. A project to develop better techniques that optimise quality while being appropriate for small-scale agriculture has taken advantage of expertise and experience in the Australian macadamia industry. The result has been better processing, with reduced cracking of the kernels by drying the nuts before shelling. The project has also adapted a macadamia nutcracker to suit the canarium nut. The European Union has now funded a pilot processing plant to follow on from the ACIAR work.

Rising demand for higher value food products, particularly in large and expanding urban areas such as Port Moresby, is increasing the **demand for temperate vegetables**. A number of highland regions grow a range of temperate vegetables, but supply to Port Moresby is limited by poor transport infrastructure and inconsistent product quality. The major alluvial valleys of Central province have better transport infrastructure (the national road network) and are well watered, with a relatively dry season that limits disease pressure. A project commenced this year to help farmers in Central province supply the increasing demand for temperate vegetables. It will ensure that the correct vegetables are selected; appropriate land, soil and water management practices are developed; and agronomic strategies to grow high-quality produce are introduced.

Children collect fruit at their family coffee farm near Goroka in the Eastern Highlands.

Boosting smallholder cocoa production

Cocoa is an important export industry in Papua New Guinea (PNG), estimated to be worth K168 million (A$87 million) annually. The industry relies heavily on smallholder farmers, with more than 80% of the cocoa in PNG produced by around 150,000 smallholder families. The majority of these families grow a mix of crops, with food staples being planted along with cocoa and other crops that can be sold for supplementary income.

The extra income provides an important facet of food security, allowing the purchase of additional food to that grown, and the provision of education and health services. In some areas of PNG a portion of this money is also directed to improving village-scale infrastructure.

Current world demand for cocoa is the highest in three decades; however, production levels in PNG are well below that achieved in comparable regions. Annual harvests of around 300–400 kg/ha are the norm, with yields lowered through the presence of disease. The worst affected areas, such as Bougainville, have ceased production.

The losses of production potential mean lost income for smallholders. In many cases management of cocoa crops is the best way to boost yields, particularly given that smallholders cannot afford to purchase inputs such as fungicides to fight diseases or pesticides to kill pests.

An ACIAR-funded project, led by the University of Sydney and linking with the PNG Cocoa and Coconut Institute, the PNG University of Technology and MasterFoods Australia New Zealand, introduced simple management options for smallholders. Training programs engaging smallholders in participatory on-farm research were formulated in the provinces of East New Britain, Madang and Bougainville. These programs operated at the village level, with information sessions and farmer-managed demonstration blocks introducing smallholders to integrated pest and disease management—simple approaches to managing the cocoa crop for effective returns.

Each farmer responsible for managing a demonstration block agreed to train 12 other farmers. Across the three provinces 108 blocks were established and thousands of farmers were trained. The village-based approach has reaped dividends.

In the remote Rai Coast district a village contracted a boat to ship its load of cocoa to market, the first time it had done so. In Madang province villagers in Saidor constructed a community resource centre from cocoa income. Farmers in Tsitalato village in Bougainville formed a cooperative to market and sell their cocoa.

Cocoa production in areas of the three provinces where the training was conducted has risen, to the point where it is lifting national production. Before 2002 production nationally had been stable at around 42,000 t. By the 2008 harvest that level had increased to 56,000 t, despite an outbreak of cocoa pod borer in East New Britain province.

The success of the project in increasing cocoa production has spread, with demand for information about cocoa management rising. This has provided an opportunity to link with an AusAID-funded project aimed at reducing HIV/AIDS, tuberculosis and malaria incidence. Demand for information about cocoa management is helping spread the message about disease control through primary healthcare programs.

Pacific island countries

Position

ACIAR's program in the Pacific island countries (PICs) focuses on Solomon Islands, Samoa, Tonga, Vanuatu, Fiji and Kiribati, and works through regional organisations where appropriate. The ACIAR strategy recognises the importance of the agricultural, fisheries and forestry sectors within these countries. It supports R&D and capacity building to address three thrusts—improved food and nutritional security; integrated and sustainable agriculture, fisheries and forestry resources management and development; and improved biosecurity and increased trade in agriculture, fisheries and forestry products.

ACIAR recognises the need to address individual PIC priorities arising from differences in climate and soils, availability of natural resources, institutional capacity, infrastructure and potential for economic growth, while at the same time acknowledging that many challenges are common and best addressed through regional collaboration. The Pacific focus for ACIAR embraces three key stakeholder groups—smallholders, producing for commercial markets; entrepreneurs, developing value chains involving cooperative production, processing and marketing; and corporate producers and exporters, providing market linkages for outgrowers. This strategy identifies the participation of women in particular as a critical feature of project success.

There is an increasing awareness of the importance of changing economic and environmental situations, and the increased vulnerability of small developing island states if flexibility, resilience and adaptation to change are not achieved. The PICs face a range of challenges including eroding tariff preferences, population and urban growth, migration of skilled labour, resource depletion and degradation, and risks from climate change and high and fluctuating food and energy prices. As described in AusAID's 'Pacific 2020—Challenges and opportunities for growth' report, ineffective policy implementation is seen as a significant impediment to development and progress.

In 2009–10 ACIAR allocated an additional 35% to the Pacific R&D program projects budget to fund two multi-year initiatives. The first initiative supports research to improve the profitability of the plantation (tree) crop sector, predominantly in Solomon Islands and particularly in oil palm and cocoa. The second initiative supports new programs on agricultural technology transfer and capacity building, including enhancement of the continuing University of the South Pacific (USP) postgraduate scholarship program. This increased allocation of funds is in addition to the support of a new ACIAR-managed program, 'Exploiting opportunities for developing high-value agriculture, forestry and fisheries products in the Pacific nations', which forms part of the whole-of-government Food Security through Rural Development initiative announced in the May 2009 Budget.

Achievements

Sustainable aquaculture in the Pacific islands region requires support economically, socially and environmentally. An ACIAR project is assisting PICs while also helping to advance aquaculture by Indigenous peoples in tropical Australia. The project is supporting the Secretariat of the Pacific Community's (SPC's) Regional Aquaculture Strategy and also supplementing the R&D activities of the SPC Aquaculture Action Plan. It is doing this by identifying and implementing targeted research activities and technology transfer in response to priority issues identified by the PICs—where possible drawing on results and expertise developed through completed and ongoing ACIAR, WorldFish and other aquaculture projects. It also aims to increase institutional capacity among the PICs to support and manage research, particularly in PNG, and to provide technical support for indigenous Australian aquaculture ventures.

To date, the project team has developed 25 mini-projects. One of these concerns the **winged pearl oyster**, *Pteria penguin*, and project research is aiding propagation of the species in support of the cultured pearl industry in Tonga. Much of this research relies on successful hatchery culture of *P. penguin*, which has a restricted reproductive season in autumn. The project's annual hatchery production in Tonga in 2008, 2009 and 2010 has been successful in producing a large quantity of spat. A major output of the hatchery activity was successful use of commercially available micro-algae concentrates to feed pearl oyster larvae. Larvae were reared to settlement on these products, demonstrating that live micro-algae culture is not necessary for larval culture of pearl oysters. This has major potential benefits for hatchery culture of pearl oysters (and other invertebrates) in the region, including reduced reliance on dedicated hatchery infrastructure, reduced hatchery costs and elimination of the need for specialised algae-culture skills.

In parts of Solomon Islands customary rights to marine resources are well defined and traditional institutions continue to influence small-scale fisheries management. Within this environment the potential is high for successful uptake of enhanced community-based **management of traditionally owned small-scale fisheries**. However, a broader management framework that meets the needs of other environments must be more flexible. With ACIAR support, the WorldFish Center is seeking to develop and test a generic adaptive management framework and a set of diagnostic tools that will guide communities in drawing up community-based management plans. These will be used to address threats from within the domain of the fishery (such as fish stocks, habitat, fishers' economic viability) while reducing their vulnerability to external threats (such as ecosystem change, trends in world markets, fuel costs).

Highlights of the project include the work of the Kia district communities in Santa Isabel province, who continue to lead the learning for adaptive management processes. The new Kia District Marine Resource Management Committee has agreed to change the thresholds of the sea cucumber fishery indicator in its management plan, based on monitoring results collected since 2006. The committee has also added fish catch recording to its management plan indicators and is using the records kept at the Bahana fisheries centre. The Kia committee has registered as a community-based organisation, which allows it to open a bank account to manage funds secured from a proposal to assist in management plan implementation over the next 2 years.

Fiji faces a significant decline in inshore marine and inland freshwater fisheries due to over-exploitation, unregulated and destructive fishing practices, habitat modification and pollution of water bodies. This results from human activities including deforestation, agriculture, road-building, hydropower generation, waste disposal, coastal marine area development and quarrying of gravel and sand. In the past 3 decades many countries have responded to such challenges by establishing aquaculture industries to help meet the increasing demand for fish and fish products. In Fiji **freshwater prawn** (*Macrobrachium rosenbergii*) farming is currently one of the most important sectors in fisheries, and during the past 2 decades its development has attracted considerable attention. Production of prawns is important to local people's livelihoods, income and food supply. A project is comparing the relative productivity of the prawn strain currently farmed in Fiji against a set of high-performing stocks introduced from Asia, and also seeking to develop low-cost feeds for local farmers.

Major achievements to date include successful introduction of post-larvae from three high-performing culture lines from Indonesia, Malaysia and Vietnam, completion of their 21-day quarantine, then rearing to brood-stock stage. The team has also collected feed ingredient samples for analysis. Fisheries staff have received training in **prawn hatchery operations** and maintenance of the prawn hatchery and brood-stock ponds. They have also assisted in designing 16 new research ponds for growth trials and formulation of protocols for satisfying import health standards in order to introduce into Fiji prawns from Indonesia, Malaysia and Vietnam.

The ACIAR forestry program has a focus on developing species that smallholders can integrate into their village enterprises as a source of reliable income. Teak is one such species, but it has not been used well by the smallholders. A project is establishing trials at various sites throughout Solomon Islands, aiming to establish small stands that will be harvested at around 15 years of age. So far, trials have been established at three rural training centres and **community teak plantations** are thriving on Guadalcanal, Malaita and Kolombangera in Western province. At one trial in Kolombangera the trees reached 2 m in height in 8 months.

Fledgling industries arising from establishment of **whitewood and sandalwood** plantations in Vanuatu are evolving rapidly. Earlier ACIAR-supported work initiated breeding programs for both species and addressed the fundamental constraints related to the availability of and access to their improved tree germplasm (seed and clonal materials). Current research is advancing both the whitewood and sandalwood genetic improvement programs in Vanuatu (while establishing the basic elements of a sandalwood genetic improvement program in northern Queensland).

Pacific Agribusiness Research for Development Initiative

A project commenced this year to study issues particularly affecting **food production and agricultural sector development**, and support the development of higher value agricultural products, as a catalyst to further economic growth.

Pacific island countries (PICs), being geographically isolated from key growth consumption markets, face many challenges to improve livelihoods and overcome poverty. They have been particularly affected by the food and fuel price surges in 2008, the impact of the global economic crisis, a number of natural disasters, difficulties maintaining infrastructure and the negative effects of climate change. In addressing these issues, the PICs and committed international agencies recognise that the way to overcome many of these challenges is to improve the competitiveness of the industries that provide a platform for stronger economic growth.

Many internationally supported economic development programs are helping to address some of these issues in the region. ACIAR's Pacific Agribusiness Research for Development Initiative (PARDI) complements these programs and is focusing on research for development to underpin the competitiveness of targeted high-value agriculture, fisheries and forestry products. Although a broad range of industries face challenges within the sector, PARDI is initially working with a limited range of products and supply chains that exist in current international and domestic markets but have the opportunity to expand into new markets. These initial chains include sectors that build on current ACIAR activities such as in the canarium nut and pearl sectors. Other commodities such as breadfruit have potential once identified researchable constraints have been addressed and overcome.

Many of the internationally supported economic development programs in the Pacific engage strongly with the private sector. Most of this engagement is based on the premise that the 'private sector will thrive where government provides the platform for private sector led growth'. PARDI will also work closely with the private sector, both directly and through other existing programs, while encouraging better engagement between the public and private sectors.

The initial geographical focus is in Solomon Islands, Vanuatu and Fiji, based upon current capacity and product focus, with likely expansion into Tonga and Samoa. Initial analysis will be conducted for the likely impact of PARDI activities in Kiribati, recognised as the least developed of ACIAR's PIC partners, with further activities possible within the scope of the project.

Sweetening a staple crop

Samson Sonia and Anna Vathogi grow sweetpotato in Binu-Tetere in Solomon Islands. Like their fellow smallholder farmers, they accepted that low yields for this crop were normal. Sweetpotato is a staple food crop in much of the Pacific. In Solomon Islands more than half of all arable land is planted to sweetpotato, with around 280,000 t grown each year, representing 65% of all staple food grown.

Low yields of the levels experienced by Samson and Anna were not normal—they were the result of viral diseases. Their aspirations to lift yield levels to sell surpluses to local markets were being constrained by these diseases.

An ACIAR-funded project led by the International Potato Center (CIP) identified the role of viral diseases in low yields, and designed interventions to boost production levels. Project leader Fernando Ezeta and his colleagues established farmer field schools (FFSs) as a means to introduce and test new sweetpotato varieties and promote improvements to the farming system.

'This is a research project in which scientists and farmers learn together in a complementary way', says Fernando. 'The project is prepared to test several alternatives to design a sustainable seed-supply system for the low-input farming systems in the Pacific Islands.'

Fourteen farmers participated in the initial FFS, with the aim of identifying alternatives to traditional systems and varieties to refine the cropping system and make it more robust. Identifying these improvements is important to ensuring that the introduction of new varieties is sustainable, and does not entrench the presence of viral diseases.

Farmers participating in the project, including Samson and Anna, are trialling a range of system options, including decisions on whether to remove shoot tips or keep them intact, what types of cuttings to use in planting and what fertiliser regimes are best. They are also evaluating new varieties of sweetpotato.

Participating farmers are conducting experiments and trialling results on their own farms before extending the best outcomes to other farmers in surrounding areas such as Malaita and Avu-Avu.

Anna and Samson have gained both farming and other knowledge from their involvement. The most important knowledge for both is the understanding that the sweetpotato system can be efficient enough to produce surpluses, the vital step needed to turn commercial aspirations into reality.

Fernando and the project team are working to extend the FFS program to other areas in Bina, Malaita and the Weather Coast of Guadalcanal. Other benefits are also being accrued.

'The project is contributing to the maintenance of local cultivars and the introduction of improved cultivars, and developing a training program on basic sweetpotato production technology through the farmer field schools', says Fernando.

SOUTH-EAST ASIA

Indonesia

Position

Indonesia is ACIAR's largest development partner, given the country's proximity and strategic importance to Australia. There is a strong need to lift incomes for the large number of Indonesia's population who live in poverty. ACIAR's Indonesia program emphasises the application of agricultural policy, agribusiness, and technical research and development to support economic growth from agriculture, forestry and fisheries in six provinces of eastern Indonesia and in parts of Java and Sumatra.

The program contributes to increasing farmers' incomes in two ways. The first is through research that increases crop, livestock and aquaculture productivity. The second is through policy and technical research that fosters the development of integrated agribusinesses by focusing on high-value commodities for which there is strong market demand. ACIAR support for SADI has led to integration of adaptive research and transformation of the research system, working with other partners who focus on agribusiness and community development at the subdistrict level.

ACIAR's approach to capacity-building activities is to support the Indonesian Government's efforts to develop a demand-driven agricultural research system. This is being achieved through partnerships with major World Bank–funded programs that support strengthening of the Indonesian agricultural research sector and training on: research management; experimental design and analysis; economics / social science for biophysical scientists; participatory agricultural research and extension skills; and agribusiness, including supply-chain management.

In addition to supporting research on productivity, ACIAR partnerships also address related pest and disease management, including shared biosecurity concerns, postharvest processing and market development issues. Protection of the resource base is supported through research collaboration on aspects of crop and livestock biosecurity, and sustainable forestry and fisheries management; and through policy research on effective engagement in markets, particularly with respect to domestic agricultural policy settings. The focus is on the development of well-functioning agricultural commodity markets in which clearer market signals will enable Indonesia to realise its comparative production and trade advantages.

The ACIAR program focuses strongly on partnership, using Indonesian systems to deliver programs and projects. Australian collaborators work with Indonesian partners to: involve end users during the development of projects; closely involve researchers in project activities at the farming community level; and integrate researchers and policymakers where appropriate. ACIAR retains its emphasis on communicating the outcomes of its projects and linking with major Indonesian government, donor and industry programs.

Achievements

Domestic demand for table and processing potatoes and South-East Asian regional demand primarily for processing potatoes is seeing the crop becoming increasingly important throughout Indonesia. Accordingly, the Indonesian Government and donors are funding research, development and extension work to support the **development of potatoes and rotational crops**. An ACIAR funded project is seeking to improve the efficiency of potato, brassica and allium (shallot) production and postharvest systems in the provinces of West Java, Central Java, South Sulawesi and West Nusa Tenggara (WNT). Constraints to production in potatoes and cabbage were determined through baseline surveys conducted throughout the project areas. Best-bet management recommendations have been validated through 'learning by doing' plots run through the FFS approach.

Potato cyst nematode (PCN) has been a problem for potato growers. Recent PCN survival experiments funded by the project and conducted at Gadjah Mada University in Yogyakarta have shown that the cysts are rapidly killed in certain inundated highland paddy soils, opening the possibility for developing the highland paddy field areas of WNT as a safe potato seed provider to Indonesia.

A project in West Java and Central Java has completed the field piloting of two key approaches in **linking vegetable farmers with markets**. The first was a participatory market-chain approach (PMCA) and the second involved a farmer business school (FBS). The pilot PMCA involved two potato market chains (i.e. fresh and processed) in West Java. A total of 80 participants, representing eight categories of market-chain actors, participated in the year-long process. Of these, 42 were small-scale farmers and snackfood processors/entrepreneurs. A post-PMCA monitoring study undertaken 5 months later indicated that at least 30 of these participants had initiated/expanded potato businesses by using the marketing innovations introduced through the PMCA.

The concept of the FBS approach was a transition from the conventional FFS into a market-oriented learning process. Its curriculum was developed at a workshop in October 2009, and the first FBS took place between October 2009 and April 2010. It involved 14 farmers in Central Java who had earlier participated in a potato–brassica crop management FFS. By the time the farmers had completed the FBS, they had successfully negotiated with a local supermarket in Solo, Central Java, and started to supply it with fresh potatoes.

The movement of animals and animal products spreads **trans-boundary animal diseases** (TADs). The management of risk for TAD spread via these movements is therefore essential for goals of disease reduction and eradication to be achieved. A project seeks to identify high-risk movements and associated factors for certain TADs—highly pathogenic avian influenza (HPAI), classical swine fever (CSF) and foot-and-mouth-disease (FMD)—that are strategically important for Indonesia and Australia. Work during the year investigated informal poultry movement to gather information on types and numbers of poultry illegally entering Bali, the entry points, and the economic and cultural drivers for this trade. Sequencing of five avian influenza viruses isolated from birds swabbed at live bird markets in Bali should pinpoint the source of the viruses. Village-to-village movement of poultry within each island was documented for both Bali and Lombok, revealing that movements for kampong chickens and ducks were predominately within subdistricts.

Surip Mawardi of the Indonesian Cocoa and Coffee Research Institute (ICCRI) demonstrates coffee-pruning techniques.

An investigation of the **pig market chain** in East Nusa Tenggara (ENT), which defined an emerging commercial chain in West Timor and a non-commercial chain throughout ENT, identified peak demand periods and the principal routes for inter-island movement of pigs. Pig movement and pig marketing practices were named as key risks for CSF spread throughout ENT.

An **outbreak of rabies** in Bali has brought into sharp focus the ease at which diseases can emerge when surveillance and testing falter. It was a reminder that similar outbreaks can occur with other diseases that affect both humans and animals. The rabies outbreak has stimulated research and discussion, and attracted international attention and subsequent funding.

The capture fisheries within Indonesian waters are highly diverse and complex, ranging from small artisanal activities undertaken by family groups to highly industrialised and mobile fishing fleets targeting high-value products. The collapse of fisheries could have severe social, economic and environmental impacts in Indonesia. An ACIAR project is investigating and trialling a variety of **fisheries assessment and management methods** potentially suitable for the Indonesian context. The project team has carried out an assessment of seven fishing ports involving rapid market assessments, detailed interviews and collection of fisheries' locally held statistics. As a result of this new information, two of these fisheries have been chosen for more-detailed assessment of catches and management opportunities. They are the lemuru (sardine) fishery carried out in the Bali Straits (a large fishery for which there exists a good deal of useful data and a draft management plan) and the painted lobster fisheries of Sadeng and Pacitan (a small fishery where very little information is available).

The waters of the Indian Ocean are key spawning grounds for many tuna species, and are the only spawning area for the southern bluefin tuna. A key to ensuring the sustainability of these species is effective catch monitoring. ACIAR earlier introduced Indonesian fisheries authorities to improved methods of catch monitoring, and now further research is improving Indonesia's capacity to **independently monitor and assess both its tuna and billfish** (such as swordfish and marlin) fisheries. A trial program since 2005 has trained fisheries observers to collect data and information on fishery vessels, fishing gear characteristics, all aspects of fishing operations, catch composition (including bycatch species) and environmental conditions. This has led to the establishment of a substantial database that has been the source for a PhD dissertation. The trial program's success has led the government and fisheries authorities to plan a formal fisheries observer program for Indonesia.

Fish farming using cages is a lucrative industry throughout the tropics and a source of income for poor coastal communities. However, the environmental effects of this activity are not clear. A recently completed project has established that the **environmental footprint of all the seacage farms** under study was highly localised. Under the microtidal conditions studied at the Indonesian location, the research team found that wastes do not disperse far from the cage area, in strong contrast to the macro-tidal situation on Bathurst Island in northern Australia. The project findings led to the development of a decision support tool to calculate the carrying capacity of an area for seacage culture.

Inland cultured fish is also a growing industry in Indonesia; it takes two forms—pond culturing and cage culturing. Stocks for cage culturing rely on wild capture and, as the practice has expanded, pressure has increased on wild stocks. A project has sought to develop sustainable co-management strategies to establish **long-term harmony between fish culture and the capture fishery**, ensuring environmental integrity. So far a draft management plan has been drawn up for the two reservoirs under study, and authorities are starting to release fingerlings to build up stocks in the reservoirs.

SADI support concludes

The Smallholder Agribusiness Development Initiative (SADI), which concluded in June 2010, aimed to improve incomes and productivity for farmers and agribusinesses—in response to market opportunities. It achieved this through a process underpinned by improved adaptive R&D capacity. SADI consisted of three subprograms:

- the enhancement of smallholder production and marketing (implemented by the Indonesian Ministry of Home Affairs, as part of the National Program for Self-help Community Empowerment and supported by the World Bank)
- the strengthening of private-sector agribusiness and small-to-medium enterprise development (implemented by the international Finance Corporation)
- Support for Market-Driven Adaptive Research (SMAR) (implemented by ACIAR).

SMAR, which comprised one-quarter of the ACIAR Indonesia program, strengthened province-based agricultural R&D capacity so that it could be more market and client driven. The first component of SMAR funded high-priority demand-driven R&D projects with international technical support. A second component improved linkages and more-effective knowledge transfer processes between R&D providers and extension providers, with new approaches to assist in dissemination of R&D outcomes being piloted in the field. The third component, on an institutional level, assisted with the development of R&D planning, development and upgrade of information technology (IT) equipment.

A large number of ACIAR SMAR projects were developed in association with SADI. A few of the many topics included a focus on chilli in vegetable value chains in eastern Indonesia; the potential for cashews, mangoes and mangosteen, passionfruit and rambutan, and citrus in eastern Indonesia; the profitability of the Flores coffee industry; and improving lobster grow-out and nutrition. Other studies examined prospects for integrated timber–forage–livestock agroforestry systems for economic diversification in West Timor farming communities, and improving cocoa production through farmer involvement in demonstration trials of potentially superior and pest/disease-resistant genotypes and integrated management practices.

Indonesian agencies are now using results coming from the SADI projects and expanding from four provinces to the rest of the nation. A mid-term review of SADI held in November 2008 provided input into the design of a new program for eastern Indonesia, the Australia–Indonesia Partnership for Decentralisation – Village Economy Development Program (ProPED).This should be operational by mid 2011 and is intended to pilot models that can unlock growth in agribusiness productivity and profitability from which the rural poor can benefit directly. Through a focus on a small number of key agricultural value chains in eastern Indonesia, ProPED will develop more-productive farm practices, better functioning markets and business practices, and improved economic governance in the agricultural sector.

Work is progressing in the project to develop integrated disease management (IDM) for chilli pepper in Indonesia. Continuing **surveys of disease incidence** in Java and nearby islands have confirmed that severe begomovirus infection persists in the Magelang and Yogyakarta regions, and equally devastating anthracnose incidence is encountered in all areas during the rainy season. The research team introduced farmers in multilocation trials and farmer meetings to the use of crop barriers to reduce begomovirus infection. Use of living barriers—yard-long beans, maize and the green manure legume *Crotalaria juncea*—has been recommended. Farmers are receptive to the crotalaria barrier as it occupies less space than equivalently dense maize planting and reportedly delays virus symptom onset by several weeks, resulting in higher continuing yield. Other IDM trials have introduced drip irrigation to farmers in seasonally dry areas near Rembang; when used in conjunction with nylon net barriers, the drip irrigation reduced begomovirus damage.

A project to develop integrated pest management (IPM) for **stem borers and insect vectors of viral diseases of sugarcane** focuses on the following elements: identifying the most important pests and diseases of sugarcane in Java; development of improved IPM practices for these pests and diseases; better extension of these practices to the sugarcane farming community; and development of additional resources to assist extension activities. Of special interest has been the discovery that vectors of sugarcane mosaic in Java are the aphids *Toxoptera citricida* and *Melanaphis sacchari*. Molecular assay of commercial crop leaf samples has shown that sugarcane streak mosaic virus affects over 80% of leaves, while sugarcane mosaic virus affects 3–5%, of leaves. This is the first time the incidence of the different mosaic pathogens in Java has been quantified.

The international competitiveness of the mango and mangosteen industries of Indonesia needs to improve. A project is developing ways to help these industries meet the requirements for technical market access and therefore deliver high-quality fruit into the market. The project team has completed a **baseline survey with the mango industry**, and a needs analysis and supply-chain mapping through a series of workshops with the mango and mangosteen growers. This has given the project a good understanding of the needs and current capacity of the industry to meet export requirements. The area of **transportation damage in mangosteen** has also been assessed and new plastic crates introduced into the harvest system, which has reduced the amount of transportation damage to the fruit from the field to the packhouse.

A project to develop an integrated approach to **crop production of bananas** to effectively manage wilt diseases in Indonesia and Australia has undertaken participatory rural appraisals in designated sites at Serampad in West Java and Legundi in South Lampung. In Serampad it was found that banana is only the secondary crop, and is planted in mixed cropping systems with high-value crops such as maize, chilli and other vegetables. In Legundi it was found that banana production systems are based only on farmers' knowledge and that farmers have no formal training or information on banana production, disease management and IPM/IDM, a situation leading to low productivity. The varieties planted in the area are not popular varieties in the market, thus commanding a low price. These findings highlight the need for banana production and disease management technologies that increase productivity.

Tissue culture meriplants are used to determine vegetative compatibility group pathogenicity as part of an ACIAR horticulture project at the Indonesian Tropical Fruit Research Institute, Solok.

Identification of annual and semi-perennial forage legumes adapted to the eastern Indonesian semi-arid tropical environment has provided the opportunity to increase food security through **modification of the traditional maize-based farming system**. While greater than 1,000 mm of annual rainfall is common in West Timor, the majority falls during a relatively short wet season of around 4 months' duration. This is followed by a long dry season in which food security becomes a major concern to subsistence farmers. Poor agronomic practice and the inability of farmers to afford inputs such as fertiliser often result in suboptimal yields of maize. Likewise, animal ownership, seen as a means of farmer participation in the cash economy, is limited by the high cost of initial investment and the often limited availability of high-quality forage for year-round animal feeding.

Consequently, the identification of a number of forage legumes, well adapted to the environment and able to be sown in relay or rotation with maize, has the potential to impact on the food security of the province. A project has identified three forage legumes agronomically suited and accepted by farmers for inclusion in the existing farming system, and there are some signs that West Timor farmers are starting to adopt them. The project is now looking for opportunities for legumes in other farming systems and agroclimatological regions of eastern Indonesia. During the 2009–10 wet season, research commenced on the integration of forage legumes into the rice- and maize-based farming systems on the island of Flores.

In another project the scientists are evaluating **strategies to improve calf survival** in West Timor villages. During 2009, 173 calves received supplements at 2% of body weight (using a ration containing 18% crude protein). Observations were also made on 33 untreated control animals. The mortality rate of supplemented and unsupplemented calves was 2.9% and 30.3% respectively, while the average daily gain was 190 g/day and 113 g/day, respectively, for the same two groups. The project team is now overseeing a transitional step to a commercial, self-funding application of the technology. Participating farmers receive advice and support, and are required to report on the previous 2 weeks' activities before receiving the next lot of rations. Farmers who have participated in previous years and know the benefits have accepted the new system well, but the team is trying to overcome some initial reluctance from new farmers entering the scheme.

Another livestock project is aiming to improve the **reproductive performance of cows** and the **performance of fattening cattle** in low-input systems of Indonesia and northern Australia. The first on-station experiment has commenced at the Beef Cattle Research Institute (BCRI) in East Java to determine the minimum amount of green feed required to maintain the body condition score of ongole (*Bos indicus*) cows fed on rice straw. Preliminary results indicate that dry cows and cows in the early stages of pregnancy are able to maintain body condition score and live weight on a rice–straw-based diet. This is important information for the scientists and farmers involved in the village work. Around 100 collaborator farmers from the two village project sites in East Java visited BCRI recently to view the experiment and were surprised but happy to see that the cows can do well on these diets.

Research to **improve cocoa production** is involving farmers in demonstration trials of potentially superior and pest/disease-resistant genotypes and integrated management practices. This year, under a project variation, the project was extended to include two new partner institutions in the provinces of Papua and West Papua. Project activities in these provinces include farmer training using IPM/IDM demonstration trials, transfer of cocoa management technologies to locally based government staff and the initiation of clone selection and testing. Based on a model developed by a previous ACIAR project in PNG, adjacent plots were established on a cocoa farm in Alang-Alang, Papua, to demonstrate the effect of different levels of input of labour and materials (such as fertiliser or compost) on production. Similar demonstration plots were established during the following month in Mandopi, West Papua.

The productivity and profitability enhancement of tropical pulses were studied in field trials at three locations in dryland regions of Lombok province to **evaluate the performance of peanut varieties** preferred by the local market. Two new varieties, Singa and Domba, recorded the highest yields. It was also clear that seed quality played a positive role in the crop performance of new varieties

compared with the seed commonly accessed from the local market. Two peanut on-farm trials conducted during the wet season of 2009 demonstrated significant yield and economic benefits from the best-bet practices over local practices. On-farm trials with mung bean also demonstrated significant yield benefits by dibbling in rows compared with broadcasting in dryland environments. These results demonstrated that the local practice of broadcasting seed is fraught with risk of insect damage as well as loss of seed viability due to direct exposure to high temperatures and evaporation at the soil surface, resulting in a suboptimal and uneven plant population.

A project aims to introduce and foster market-driven business practices in the **superior quality mandarins** (keprok) supply chain. This has involved visits, product testing and discussion with supermarkets, distributors, wet markets, traders and collectors. Researchers now have a good understanding of the market requirements for Indonesian citrus, and the significant impediments that keprok has compared with imported citrus. However, they have highlighted several niche opportunities worth pursuing that should provide impetus to improve quality, logistics and supply issues. These include, in particular, the gift ('ole ole') markets and smaller (higher value) retail outlets. Work is also underway to introduce best practice technologies to lift the fruit quality. These are based on results from previous studies and involve a combination of cultural practices and intermittent irrigation during the dry season.

Production of passionfruit encounters challenges that are common to both South Sulawesi and north-western Australia—for South Sulawesi the primary market driver is consistent monthly supply for processing fruit; for north-western Australia it is a high-priced niche for fresh fruit. A project aims to resolve these issues. One objective is to **improve passionfruit vine longevity** through appropriate disease management in highland production areas of South Sulawesi and Australia. Comprehensive surveys have been completed in the two areas, revealing the presence of a number of economic pests and diseases. Disease management strategies for passionfruit have been developed, and in Sulawesi the project team has conducted initial workshops on the use of disease-tolerant rootstocks and grafting techniques. Disease-tolerant varieties are being introduced, and in South Sulawesi a local cultivar, 'Bogor Gold', is currently being used commercially with good success in the highlands. The project is already making significant impacts in passionfruit development in both South Sulawesi and Australia.

Another project seeks to generate value-chain solutions that improve the engagement of smallholder farmers in eastern Indonesia with the **international specialty coffee market**. The project is active across the provinces of South Sulawesi and ENT. It has a strong emphasis on end-user (market-driven) engagement and is actively coordinating with international coffee buyers at various stages of project implementation. A principal focus is a study of the socioeconomic institutions that underpin smallholder coffee production and trade in eastern Indonesia. A survey involving 796 coffee-growing households was completed in March 2009; the data has been analysed and a draft report has been prepared. Key findings have related to the influence that localised livelihood strategies have on the potential for value-chain engagement. Action-research methodologies involving the facilitation of buyer linkages with producers in Flores and Enrekang are now being pursued during the 2010 harvest.

A project on **improving productivity of *Acacia mangium* plantations**, grown on 6-year rotations for use as pulpwood, has focused on improved genetics and better site management to prove that productivity can be doubled. The management changes also reduce the use of fertilisers by up to 30%, thereby increasing profits for smallholder growers and increasing the availability of plantation-grown resources for Indonesia's pulp and paper industries. For smallholder plantation owners, who typically have 5 ha of plantations, this would mean an average increase in income of $530 per year over the life of the plantation.

In the province of Nanggroe Aceh Darussalam (NAD) research work is helping to develop more-profitable and resilient farming systems following the Indian Ocean tsunami of December 2004. As part of ACIAR's commitment to tsunami recovery in NAD, it funded two projects that addressed **soil and agronomic production constraints** arising from the tsunami, and emphasised capacity-

building activities at the regional and farmer levels. Current research is addressing some of the identified constraints by focusing on mixed farming with rice–legume rotations. The project team has undertaken a survey of infrastructure and climatic constraints to the local farming systems in four districts, producing maps of irrigation network condition and soil type, and an analysis of climate variability for each district in the project. This survey has identified the sections of the irrigation networks that are damaged or poorly maintained. Permanent trial and demonstration sites have been established in the four districts. Of particular note are the eight women's farming groups that commenced in the period June 2009 – April 2010, supported by local extension staff.

Post-tsunami rehabilitation continues

Pak Burhan is a farmer in Desa Baro village in Aceh's Pidie district. The village of 300 people, close to the sea on the island's east coast, suffered through the December 2004 tsunami. Two years after that event, rice fields that were covered in sediment had become unproductive and saline. Attempts to grow rice and soybean failed and the fields were abandoned.

Some areas affected by the tsunami were able to re-establish farming but many, like Desa Baro, faced a continual struggle to produce enough food. Persistent crop failures were a reminder not just of the scale of devastation, but also of its long-term effects.

One of the worst problems was the subsidence of crop lands. A little-known aspect of the devastation was that the earthquake that triggered the tsunami caused land subsidence, allowing tides to reach farther inland. For Desa Baro this meant that only 45 hectares (ha) of arable land remained after tidal inundation.

An ACIAR-funded project to rehabilitate tsunami-devastated soils, led by the NSW Department of Primary Industries, helped the farmers of Desa Baro to implement a program to restore fertility to local soils.

A series of recommendations were put in place, beginning with using irrigation water to flush remaining salt from soils. Once this had been achieved, organic matter was added to soils to build fertility, allowing the establishment of a trial for a new soybean variety. Four new varieties were tested, with one yielding at 3 t/ha. By comparison, an average harvest pre-tsunami was less than 1.5 t/ha. Rhizobium inoculation, new varieties and greater control of pests at critical stages of plant growth are now standard practices.

The rehabilitation of land has also seen rice successfully planted. The 2009 rice harvest yielded 8.5 t/ha, providing farmers with a profitable return. New varieties and better management of fertiliser applications continue to improve rice production.

One of the main reasons for this success has been the role undertaken by Pak Burhan, who has championed the new approaches, motivating his fellow farmers. This passion convinced his village to increase the trial area for new cropping techniques. The results are helping Desa Baro slowly return to pre-tsunami life.

Vietnam

Position

ACIAR's program aligns with the Vietnamese Government's 2006–10 Five-Year Agricultural and Rural Development Plan, particularly the first strategy (improvements in agricultural productivity, product quality and marketing) and the second strategy (development of processing for agricultural and forest products). ACIAR also aligns with the Paris Declaration and Hanoi Core Statement by integrating its work closely with the Vietnamese Government's programs and other donors wherever possible. The ACIAR Vietnam strategy emphasises technical and agribusiness research to enhance smallholder incomes from selected areas of high-value agriculture, aquaculture and forestry.

The program addresses a targeted number of major areas where Australian expertise has the ability to impact positively on smallholder livelihoods. This has led to the formulation of new programs addressing management of constraints to soil, water and livestock systems for improved incomes in south-central coastal Vietnam, and development of high-value agricultural products from highland north-western Vietnam. The programs are designed to address socioeconomic and marketing issues as well as specific technical constraints. Australian technical expertise in managing poor soil fertility and limited water is crucial to the program in south-central coastal Vietnam, while Australian experience in temperate agriculture (including horticultural and livestock production) adds value to the research in north-western Vietnam.

ACIAR recognises the vulnerability of agriculture in the Mekong Basin to climate variability and change. A small program focusing on climate change adaptation and mitigation in rice systems in the Mekong Delta of Vietnam complements catchment-level and whole-of-Mekong-Basin programs on water and climate change supported by AusAID and other donors.

ACIAR's fisheries and forestry programs, while differing in regional focus, have a common emphasis on improving incomes for farmers and the processing industry by targeting higher value products and markets. The fisheries program focuses on aquaculture, emphasising nutrition and high-value species. The forestry program has an increased emphasis on genetics, silviculture and processing technologies for higher value wood products.

Linkages to the programs of AusAID and other donors working in these regions augment the work of ACIAR, and there is also a particular focus on linking central research institutes with provincially based research and extension departments and mass organisations. ACIAR also continues to seek greater involvement of the private sector and NGOs in its projects.

Achievements

The remarkable economic growth in Vietnam over the past 2 decades has led to significant structural changes in its economy. The agriculture sector now faces strong competition for its land and labour resources. There has been a loss of prime agricultural land to industrialisation, while farmers in the Mekong Delta have complained of rural labour scarcity. The agricultural sector also faces strong pressures on the marketing side, as strong growth in incomes has fuelled a rapid rise in the livestock sector. The recent global food crisis has raised **concerns about domestic food prices** and related agricultural policy. With its recent accession to the World Trade Organization (WTO), the effects of the global market are likely to have a stronger influence on other parts of the Vietnamese economy, fuelling stronger growth in non-agriculture sectors and creating additional structural adjustment pressure in agriculture.

ACIAR is supporting a project designed to develop capacity in the partner institution for quantitative analysis of structural adjustment issues, and to provide policy advice on these issues. The project has developed a medium-term model to assess a range of domestic issues including the **outlook for different agricultural industries**, the impact of land loss on agricultural output, the influence of productivity growth on medium-term production and food prices, and demand for rural labour at

the regional level. During 2009–10 the project continued to focus on training and developing the medium-term projection model. Most of the effort was focused on developing a baseline dataset that represents the farming systems in each of the eight agroecological regions, and depicts the characteristics of small-scale, semi-intensive and intensive livestock production systems.

There is growing interest in Vietnam in the new **non-astringent persimmon varieties** 'Fuyu' and 'Jiro' as an alternative to the traditional astringent varieties. A project is enhancing the productivity, yield and fruit quality aspects of persimmon in Vietnam by changing to the new non-astringent varieties using appropriate farmer development practices based on low-level technologies, best orchard management practices and new handling systems. The project is establishing demonstration orchards to instruct the ethnic minority farmers in northern Vietnam, ensuring that new technologies for growing persimmons reach as many farmer groups as possible. The nursery at Phuong Huyen Plant Variety Company in Hoa Binh province of northern Vietnam has over 1,000 trees of 21 persimmon rootstock types collected from northern and southern areas of the country. Over 700 of the rootstock trees have been grafted to 'Fuyu' and 'Jiro' for planting in trials and demonstration blocks. There has also been development of integrated pest and disease management and good agricultural practices. As well, efforts are underway to determine the best method to remove astringency from the traditional Vietnamese varieties.

There is increasing **demand for indigenous vegetables** in Vietnam, and women play a significant role in their production. A project is helping to lift farm income in rural areas by increasing the skills of women in the safe production, promotion and utilisation of indigenous vegetables. In mid 2009 the project was redesigned, reshaping it as a 'research for development' project. Later in the year, at a revitalisation workshop, the results of a scoping study were presented. Six vegetables were selected and agreed upon as the project focus. In the past 6 months project activities have sought to develop best-bet management practices and a more in-depth market analysis for the six selected vegetables.

Another project aims to increase smallholder engagement in competitive value chains associated with **farming systems based around maize and temperate fruit**, while also improving land and crop management practices for the development of sustainable and profitable farming systems. It involves the smallholder farmers in the north-western highlands of Vietnam who have recently acquired market access and are in transition from subsistence to commercial agriculture. The project was launched in May 2009 with an inception workshop, which aimed at socialising the project design to all project partners; building capacity for participatory, inter-institutional collaborative research; establishing field study teams and work plans; and formulating criteria and guidelines for project site selection. It involved a range of institutes and individuals from varying disciplinary backgrounds, the first such arrangement in Vietnam.

Past ACIAR projects have focused on **nutrition of important aquaculture species**. A new project is building on this research to study issues related to diet development and low-value fish replacement, and bring together a collective of important aquaculture sectors in Vietnam. The key subjects for study are finfish (barramundi / Asian sea bass, grouper and cobia), mud crabs and spiny lobster. The project is providing advice and training on feed formulation and processing in a series of workshops to be held in Vietnam in 2010 and 2011. Other activities include socioeconomic surveys of farmers of marine fish, mud crab and spiny lobster to understand the real and perceived limitations to the adoption of pelleted feeds, and a feed mill survey to characterise the feed production industry and raw material options available locally in Vietnam.

Despite having many native clams, mussels and oysters with excellent production potential along approximately 3,000 km of coastline, Vietnam trails its neighbours in bivalve production. China, for instance, produces over 90% of its 11-million-t harvest of bivalves from aquaculture. A project is assisting the development of bivalve hatchery production in Vietnam and Australia. So far, scientific and commercial interest in the **expansion of bivalve culture** has led to rapid initial progress in developing hatchery skills and capacity. The hatchery at the National Marine Broodstock Centre at

Cat Ba is now complete and the installation and operation of advanced culture systems to ensure the optimal use of the new facility now well established. Production of commercial-scale quantities of juvenile clams and oysters is now well into its second year. Pacific oysters occupy 100 ha of Halong Bay and further areas of 400 ha and above are earmarked for expansion.

The plantation industry in Vietnam continues to expand and thrive, with **fast-growing hybrid acacias** being produced in a rotation of around 7 years. Ongoing research is focusing on maintenance of soil fertility from one rotation to the next. At present much of the acacia wood is destined for the paper industry, but ACIAR work is focusing on producing veneers from acacias, which bring a much better price than wood pulp.

In Vietnam demand for pork is increasing rapidly. Successful commercial smallholder pig farming may help to meet demand while serving as a vehicle for alleviating some of the country's widespread rural poverty. An ACIAR project is focusing on giving smallholder pig producers better access to higher value market chains and thus helping them to raise their incomes. Key research results suggest that small, household-based pig producers are competitive and able to **generate income from pig production** as long as they can exploit areas where they have cost advantages, such as in home-grown or own-produced feeds. For the next few decades smallholder pig rearing will continue to play an important role in pork supply, poverty reduction and household employment generation, especially for women.

Since the 1980s the plant-growth-promoting rhizobacteria (PGPR) have been known to promote the nutrient-efficient growth of cereal crops. Preliminary research funded by ACIAR and AusAID verified in field trials near Hanoi that the PGPR effect can reliably increase the average yield of rice by 10–20%. A biofertiliser product, now registered as BioGro, has been developed and a project has sought to **understand the function of the biofertiliser**, while at the same time promoting its wider adoption in Vietnam and possible commercialisation. In the past year farmer trial sites have been set up at two locations in the Mekong Delta. Positive data on benefits from BioGro are now available for two crops at each site and a third crop was due to be harvested in June 2010, giving results for all three crops in the annual cycle. The first crop after the flood yields best, with the subsequent two crops declining in yield as acid sulfate conditions develop and nutrients deposited by the flood are depleted. These trials have shown that early timing of application of a moderate rate of urea-nitrogen is correlated with the greatest response from BioGro. However, because high residual soil nitrogen (soil-N) is deleterious to beneficial effects from BioGro, the soil-N must be optimised.

On the coastal provinces of central Vietnam agricultural development is hampered by lack of water combined with sandy soils that are infertile and difficult to irrigate. A promising approach to improve agricultural development in this region is expansion of cashew nut production using small-scale farm dams to capture wet season run-off and irrigation technologies that are economically and socially appropriate. There is also potential to **improve soil fertility and integrate nut production** with forage production using groundcover species such as *Arachis pintoi*. A project aims to improve smallholders' incomes by improving the profitability of cashew nut production. Over the past two cropping seasons a prolonged wet season followed by two typhoons affected cashew field experiments. This year unseasonably hot conditions at flowering resulted in nut-set failure across Ninh Thuan and surrounding coastal provinces, and yields recorded from field trials were well down on previous seasons. The situation is of concern as many cashew farmers will receive little or no income from their orchards this year. Binh Dinh province did not experience the same climatic extremes, and cashew yields here indicate benefits from following guideline fertiliser inputs and scheduling irrigation using mini-evaporation pans.

Research is under development to study **climate change in the Mekong region**. Issues include seawater intrusion and flooding, both of which are likely to worsen under climate change. The aim is to prepare the rice-based system for change, developing salt-tolerant varieties that will survive under submergence.

Philippines

Position

The main aim of ACIAR–Philippines cooperation is to assist in increasing productivity, marketability and international competitiveness for Philippines agricultural products, taking into account the impacts of trade liberalisation. Underlying this competitiveness is the need to improve agricultural productivity through more-effective extension of research results to farmers and processors and through greater responsiveness to market opportunities. This should result in higher quality commodities being produced more competitively. Specific opportunities may come through research for development and marketing of products from aquaculture, horticulture, forestry and livestock enterprises and from farmer-driven improvements in agricultural systems. The emphasis on high-value products and market competitiveness aims to address food security by supporting research that would provide smallholder farmers and traders with increased cash income, supporting the purchase of staple foods.

A significant proportion of Philippine farming is carried out in fragile sloping environments or sensitive watersheds, and it is important that intensification of agricultural productivity does not come at the expense of land degradation. To increase the prospects for sustainable adoption of the results of research, ACIAR's Philippines program increasingly emphasises involvement of local partners (such as local government units, NGOs and farmer community groups) in projects and commercial agribusiness companies. It also promotes projects that implement the results of earlier ACIAR-supported research in the Philippines.

Over the past 5 years ACIAR's programs have refocused their efforts towards the poorer areas of Mindanao and the Visayas, while still maintaining strong links to research expertise in Manila and Los Baños. Improving uptake of research in the Philippines is a major priority. In collaboration with Philippine partners, ACIAR has increased its emphasis on better understanding extension processes and involving farmer and community groups in projects. There has been encouraging success with the adaptation of the landcare approach in Mindanao, management of catchments in the Visayas island of Bohol, and uptake of methods for successful tree establishment. Design processes that involve the end users of the research and address their needs underpin the new research projects. This design also accommodates additional challenges that have arisen from the devolution of management and governance of extension responsibilities to local government units, and the comparatively weak research–extension linkages that frequently exist. In recognition of the strong research capacity in the Philippines and the ability of Philippine partners to co-invest in programs, there was an increased emphasis on joint program design and monitoring during 2009–10.

Achievements

Landcare has been successfully adapted at three sites in Mindanao. The sustainability of this success has not been properly examined and is not yet fully understood. Current research in the Philippines aims to assess and enhance the sustainability of the approach at the three sites and **test the landcare approach at new sites** with differing needs, such as Bohol, to complement ACIAR work there on watershed management. The project made good progress during the year under review, with all six of the major milestones being achieved either by the end of the project term on 30 June 2009 or during the 6-month no-cost extension to December 2009. A major focus has been to encourage the evolution of the Landcare Foundation of the Philippines Inc (LFPI) so that it can take on the defined roles and responsibilities for the broader development of landcare in the Philippines. After an internal restructuring of LFPI between July and September 2009, an ACIAR scoping study undertook an evaluation of its institutional health and of the landcare movement in general. The findings of this study formed the basis for an extension of the project.

The extension commenced in January 2010, and all but 2 of its 13 major milestones were on track at the end of 2009–10. All three regional programs continued to achieve outcomes in scientific benefits, capacity building and community-level impacts, although the extent of these varied across sites. The perceived success of landcare in conflict communities was instrumental in LFPI being

given an extension of the United Nations Development Programme Act for Peace Program in using the landcare approach to improve livelihoods in two conflict communities of Koronadal City in South Cotabato. In addition, a special study of the **economic impacts of landcare in Bohol** (commenced during the earlier phase of the project in 2006) was completed and published as a University of Queensland PhD research thesis in July 2009.

A complementary small research activity seeks to improve development outcomes for smallholder farmers through closer collaboration between landcare and the ACIAR horticulture projects underway in the Philippines. Achievements to date include development of a Landcare Coordinators Network to improve coordination of technical inputs between sites, and the holding of special meetings with landcare stakeholders at Claveria, Lantapan, Ned, Pilar and San Isidro to better clarify the needs of market clusters and landcare members. The project team has developed a program of cross-visits between sites for farmers and local technical support personnel, and has also introduced a training program template for new scaling up of sites to maximise impact from technical inputs and cross-visits. The team has also established a collaborative network between the Landcare Coordinators Network and the Philippines Horticulture Manager attached to the ACIAR horticulture projects, to improve information exchange and collaborative project activities between landcare coordinators and horticulture project personnel.

Two **major horticultural initiatives** continued during the past year. Both initiatives focus on the southern Philippines. The first targets why the attempts during the first year of project implementation failed to achieve the cooperation of a commercial collaborator who exports 'Solo' papaya to China and/or Japan. The project is now achieving success with a domestic supply chain where papayas come from South Cotabato and are distributed in various supermarkets in Metro Manila and outlying provinces.

Control of the fungal disease *phytophthora* in durian and jackfruit has been greatly helped by simple interventions and getting growers involved. The project team has also worked with the fruit company Del Monte to help with disease problems of papaya, especially bacterial crown rot. On Samal Island off the coast of Mindanao, progress is taking place in developing and evaluating sustainable practices for the integrated management of mango pests, and field and postharvest diseases in mangoes.

John Oakeshott and Noel Morales look at Noel's first greenhouse tomato crop.

Vegetables protected with bamboo and plastic structures are thriving at project sites in Leyte. A bamboo house-type structure built at a farmer's site in Cabintan produced broccoli and cabbage crops that yielded 5.8 and 3.6 t/ha, respectively, compared to zero yields from outdoor-grown crops. The crops produced under the structure also showed a positive gross margin in the economic analysis. Tomatoes were grown at another site at Maasin, where a plastic-covered, bamboo house-type structure was built, and the crop grown was virtually disease free compared with a significant *Alternaria* fungus infection on outdoor-grown plants. Based on the larger plants and increased fruit set, the crops grown under cover appeared to have a potential yield about double that of outdoor-grown crops.

Another component of the project seeks to integrate soil and nutrient management into vegetable cropping. The results of a soil survey completed in June 2009 formed the basis of the **characterisation of various soils planted to vegetables** in Leyte and various areas in Mindanao, as well as the formulation of treatments used in the subsequent field trials. More than 100 soil samples were analysed in the various sites for their physical and chemical characteristics. Research programs developed at the five sites focused on developing fertiliser strategies based around implementing the most cost-effective method of supplying the nutrient requirements to the target vegetable crops.

On Bohol Island there are opportunities for farmers to reduce some of the negative aspects of agricultural activity through introduction of conservation techniques, undertaken in association with existing landcare approaches that provide training and encourage adoption. Building on the experience and expertise developed through earlier ACIAR projects, the project is promoting the **adoption of improved farming on highly erodible soils** on steeply sloping uplands in two upper watersheds. Significant progress has been achieved towards meeting key objectives of this project. In the establishment and ongoing maintenance of farmer-managed demonstration sites, local municipalities in the San Isidro and Inabanga watersheds have provided consumables such as fertiliser, seed and cuttings. ACIAR project partners provide instrumentation, training and soil management/cropping expertise. The establishment and ongoing community management of these sites have assisted in the process of improving adoption by provincial farmers.

Project training staff and local municipal agriculture officers have estimated that approximately 50% of the farmers in the upper Inabanga watershed are now adopting improved farming practices as a consequence of project training and dissemination of project results, cropping advice and supply of planting materials. The improved practices include use of contour cultivation, natural vegetated strips (with and without crops), minimum tillage planting, cover crop plantings, alternative cropping including vegetables, natural residue and/or plastic mulching, and accelerated composting and vermiculture (worm farming) techniques. The project team is now undertaking agroeconomic data analysis and developing soil–water monitoring budgets to identify the farming practices and crops that were most successful in improving economic returns versus those that were most successful in improving soil and reducing water losses.

Fisheries in the Philippines are divided primarily into municipal and commercial sectors. The municipal sector comprises fishers with vessels up to 3 gross tonnes and those who fish without vessels; both these groups are allowed to fish in areas up to 15 km from the coast known as municipal waters. A handline fishery using bancas (more commonly known as pump boats) is a major and growing component of both municipal and commercial fisheries. These vessels are generally on or near the weight limit of the municipal fisheries regulations. It is estimated that there are more than 3,000 of these vessels, equating to tens of thousands of fishers. Large tuna (such as yellowfin) are their main target species. Much of the handline fishery can be categorised as illegal, unreported and unregulated (IUU)—its fishing vessels venture into international waters and it is estimated that about 50% of the catch is taken in the waters of Indonesia, PNG and other neighbouring countries. This has created considerable tension and mistrust in the region. This project is now into its second year, carrying out a preliminary **investigation of the nature of the handline fishery** in the Philippines, including the IUU components, and establishing benchmarks between the existing legal framework for the handline fishery against national and international obligations and best practice.

Early adopter breaks debt shackle

Alberto Tado is a farmer in Sierra Bullones, within Bohol's Inabanga watershed. The municipality has about 4,800 households with about 5,000 people engaged in farming. Many farmers in Bohol work marginal land on steep slopes, where erosion is a constant problem, caused by up to 2,000 mm of rainfall a year.

Mr Tado has been participating in an ACIAR-funded project examining improved farming practices on soil and water resources on Bohol Island. Before the project started, Mr Tado's annual income from growing rice, eggplant, squash, cowpeas and melon on about 0.5 ha was 16,000 Philippine pesos (PhP) (about A$500). The family plantation had been in debt for years, a common occurrence in many areas of Bohol and beyond.

Potentially high-income crops such as corn, cassava and some vegetable are rarely planted as farmers link these crops to erosion.

Mr Tado's farm was selected as an ACIAR project demonstration site to improve its productivity and soil conditions. Mr Tado is managing the site for the project, adopting best farming practices for crop, soil and water management. For comparison, unimproved sites using only traditional farming and land-management practices are used.

Mr Tado has received on-site training in soil and water conservation technologies, soil analysis, farm journal planning and farm record keeping. Advice has also been provided on how to broaden his cropping options, such as other vegetables.

The Philippines Bureau of Soils and Water Management, the International Centre for Research in Agroforestry and local government bodies have also introduced alternative income-raising activities using food-processing techniques, accelerated compost preparation, vermicomposting and vermiculture. These new initiatives have been introduced through meetings and hands-on training workshops with the local community.

Mr Tado has planted eggplant, squash, sweet pepper, mango and cowpeas.

After just his first harvest, his commitment to the project was rewarded. The income from his eggplant crop alone was PhP31,000 (about A$1,000), which gave him the opportunity to free his coconut plantation from debt.

Long-term field and demonstration trials are introducing a key facet of land management on steep slopes—hedgerows planted across the slope. These act as soil traps, allowing farmers to preserve their farming land.

As well as the income from his vegetable crops, Mr Tado anticipates an additional income from pineapples planted in the hedgerows, which will be harvested in 2 years. His experience has served as an impressive model for other farmers.

East Timor

Position

Agriculture provides livelihoods for more than 80% of East Timorese. Similarities between the environments of East Timor and northern Australia give Australia a comparative advantage in applying its research, development and extension skills to assist this emerging nation. ACIAR began collaboration with East Timorese institutions in 2000. Current projects aim to help achieve food security, reduce poverty and build local agricultural research capacity.

ACIAR's program focuses on applied assistance, while helping to rebuild R&D capacity and infrastructure. The initial projects underpinned the introduction and evaluation of higher yielding staple crops and the rehabilitation of the university's agriculture faculty. The outcomes from these projects are providing a base for further development efforts supported by Australia (ACIAR and AusAID) and other donors, and aligned with the Sector Investment Programs of the East Timor Government.

Achievements

The Seeds of Life program within the East Timorese Ministry of Agriculture and Fisheries (MAF) conducted its activities in 7 of the country's 13 districts during the final year of implementation. Seeds of Life 2 (SoL2) has an impressive list of achievements. One component of the project involved rehabilitation of three research stations, and mid-way through the final year all **rehabilitation work on the buildings at Betano Research Station** was complete and facilities were operating. Five houses and two office buildings were also complete at Loes Research Station. Suitable farm equipment for both stations was purchased and the Betano equipment was in operation by May 2010. At Loes the chainlink fence around the perimeter of the station funded by the MAF was complete, and MAF also funded the fencing around the research station site at Darasula, Baucau. A station manager was assigned to oversee site development and an environmental site assessment drafted.

Replicated **trials that included maize, cassava, sweetpotato and peanut** were conducted at four research station-style sites during the year (Aileu, Loes, Betano, Fatumaca). Replicated trials of rice, wheat, barley, potatoes and beans were also conducted in farmers' fields as there were no representative ecosystems available for these crops on research stations. Field days were held at Aileu and Betano, and farmer observations about different varieties were recorded. These were supplemented with small field days held in subdistricts to introduce new tested varieties of different crops to local farmers.

Photo: Brad Collis

A trader in a Dili produce market displays the results of efforts to increase East Timor's agricultural diversity.

SoL2 personnel provided **training on seed production and storage**, with 12 formal courses being held between September 2009 and May 2010. A sweetpotato production field day was also held in November 2009. Seven seed production officers operating in six districts worked with an advisor to produce 60 t of Nakroma rice seed, 20 t of maize, 100,000 sweetpotato cuttings and 18 t of Utamua peanuts during the reporting period. Seed dryers, seed-cleaning equipment and storage facilities were installed at two sites and smaller depots were constructed at two other sites.

The SoL2 program continued to evaluate new varieties of food crops for cultivation in East Timor. Included were 20 maize (mainly from CIMMYT), 15 peanut (mainly from the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT)), 16 sweetpotato (mainly from CIP) and 20 irrigated rice, varieties (from the International Rice Research Institute (IRRI)) and 25 cassava clones (mainly from International Center for Tropical Agriculture (CIAT)). In addition, the team conducted preliminary research on climbing beans, barley, wheat and Irish potato. Within each trial were at least two local varieties, and a collection of local legumes was also planted for evaluation.

Germplasm conservation during the year included 80 cassava, 40 sweetpotato and 30 peanut varieties. A **collection of native legume species** also added to the diversity of material under evaluation for East Timorese farming systems.

Seven East Timorese journeyed to Australia for a study tour of research facilities at Hermitage Research Centre in Queensland. The participants observed the precision and methodologies used by Australian researchers and discussed methods for improving their own practices.

More than 800 maize, peanut, cassava, sweetpotato and rice on-farm demonstrations and trials were established in 17 subdistricts during the 2008–09 wet season (November–April), and a similar number of trials were installed during 2009–10.

Apart from varietal development, research was also conducted to **improve the 'agronomic management' available to farmers** to complement the high-yielding varieties. Lack of weed control is a major constraint in the upland areas and experiments on this were installed on maize, peanuts and rice. Included was the use of velvet bean (*Mucuna pruriens*) to control weeds in maize. Nitrogen application trials were also implemented on farmers' rice fields.

There is a desire from all involved parties for a new phase of the Seeds of Life program. This has AusAID and ACIAR support and in November 2009 a preliminary design for SoL3 was completed. A final design team visited East Timor in April 2010 and implementation is scheduled for 2011.

Seeds bring new markets to life

Agriculture in East Timor is the dominant sector, with around 80% of the population dependent on farming for a livelihood. Despite this, the World Bank estimates that only 26% of the country's GDP comes from agriculture, with industry value-adding contributing only 19% to gross domestic product (GDP).

By comparison, in Indonesia agriculture contributes only 14%, while industry value-adding contributes 47%, of GDP. Life expectancy is 71 years of age, with 99% of Indonesian children completing primary education. In East Timor only 69% of children graduate from primary education and people are expected to live to 61 years of age.

Food security remains a significant challenge for East Timor, with low productivity levels and a high rate of subsistence agriculture. ACIAR-funded research is making a significant contribution to lifting productivity in the agriculture sector.

Maria Elena Castro Soares lives with her husband and 10 children in the village of Lepa in Liquica district. As with many other farmers, yields from her families rice crops were low. Many East Timorese families struggle to grow sufficient food, are often forced to consume seed needed for future planting and have to rely on foraging for wild food.

For Maria and her family a visit in 2005 by Luis Almeida, a staff member working on the ACIAR – Seeds of Life project, changed her future. Luis provided 5 kilograms of Nakroma rice, which they planted. They subsequently harvested 10 sacks of rice.

'I like Nakroma because it is high yielding, good to plant and more resistant to pests than the local variety, and because there is strong demand for Nakroma when I sell it', Maria said.

The introduction of the improved variety has also been the catalyst for Maria and her husband to join other farmers as part of the Grupo Dauroma rice farming group. They formed the group 'because it is faster to do everything working together than working alone', said Maria. The group also cooperates with other groups, including exchanging labour.

Maria is now able to grow enough rice to feed her family of 12. Some of the harvest is sold or shared with other farmers. The farmers receiving a sack of seed give two back to Maria and her husband when the rice is harvested.

Sacks of rice are sold for between US$15–20, including some to farmers from neighbouring districts who, having heard of its success, are eager to plant Nakroma. Maria estimates that the total income her family has earned from planting Nakroma since first being given seed in 2005 is around US$1,000. This money has been used to pay for schooling for their children and for farm labour, and to fund merchandise to start a small kiosk business.

Cambodia

Position

ACIAR's strategy in Cambodia has three thrusts. First, it supports research that aims to increase and secure the productivity of rice-based farming systems. This is important both for household food security and national and regional food production. Second, it supports applied R&D that underpins agricultural diversification, particularly into non-rice field and horticultural crops and ruminant livestock. A third thrust recognises the vulnerability of Cambodian agriculture, particularly rainfed cropping, to climate variability and change. In 2009–10 there has been increased emphasis on research to underpin food security. A new program is supporting research on adaptation to climate change at the farm scale, developing capacity for more-efficient use of soil and water resources.

The Cambodian Agricultural Research Fund (CARF), established in 2002 with AusAID and ACIAR co-funding, provides Cambodian scientists with opportunities to identify research priorities and design demand-driven agricultural research projects, compete for agricultural research funds and lead the selected projects. Over the past few years ACIAR has diversified its R&D provider base in Cambodia. The Cambodian Agricultural Research and Development Institute (CARDI) is expected to continue as a key research provider in the rice-based farming systems area. However, in studies of horticulture, livestock, fisheries and economics, and in assessments of community impacts from research, additional partners are important.

ACIAR is managing the research and extension component of the new 5-year, A$42 million Cambodia Agricultural Value Chain (CAVAC) program. CAVAC's goal is to accelerate growth in the value of agricultural production and smallholder incomes in selected provinces (Kampong Thom, Takeo and Kampot) through improved productivity of rice-based farming systems.

Considerable progress has been made in developing the scientific expertise of a number of Australian-trained Cambodian researchers who are poised to contribute significantly to the development of Cambodian agriculture.

Achievements

While most farmers in Cambodia keep cattle for draught purposes and wealth accumulation, some can see the potential of cattle production as a source of income. But providing feed for cattle is a major challenge for 8 months of the year, and this problem is compounded by labour demands (up to 8 hours daily) associated with feeding cattle. A project is helping to **increase cattle productivity of smallholder farmers** in Cambodia by improving feed availability and quality throughout the year and reducing the labour requirements associated with feeding cattle. It capitalises on the recent introduction of improved forages and fodder banks to Kampong Cham by CIAT.

The adoption of **forages for feeding to cattle** has exceeded expectations. Forages have been adopted in seven provinces beyond the initial focus of the project. The most common reason cited by farmers for choosing to adopt forages is 'time saving'. Project scientists estimate that the average time saving is 2 hours/day and can be up to 8 hours/day. This has potentially profound social and community impacts, since fathers and children take responsibility for cattle feeding. This time saving therefore presents opportunity for increasing off-farm income and improving educational outcomes for school children through increased time spent studying rather than feeding cattle.

Data generated from on-farm validation of recommended feeding practices indicate that the **feeding interventions double the value of cattle** (from US$200/head to US$400/head) following a 4-month forage feeding period. In addition, the demand for these cattle, as a consequence of improved body condition, is significantly greater than for cattle not tended with the recommended feeding practices.

Project partners CARE and Heifer International have both identified the introduction of forages for feeding to cattle as priority activities, and have recommenced activities with ACIAR's project. Cooperation with other ACIAR-funded projects has been critical to the success of this project and, in particular, for driving the adoption of forages to provinces beyond the initial scope of this project.

A project to understand livestock movements in the Greater Mekong subregion is fundamental in developing a regional strategy to **control foot-and-mouth disease** in South-East Asia. Outbreaks in South Korea, Hong Kong and Japan, all of which featured a South-East Asian strain of the virus, have emphasised the importance to Australia of continuing to support disease control programs in the region in order to reduce the biosecurity threat posed by its northern neighbours.

Major data collection activities were completed in Cambodia and Laos at the end of 2009. Follow-up efforts to obtain missing livestock movement records and livestock price data from various Cambodian and Lao provinces, and analysis of these data, will proceed throughout 2010 to determine if market prices are clearly predictive of animal movements.

The effort to work with traders has been a outstanding success, generating valuable descriptions of trade routes and volumes, trader networks and trading practices within Cambodia and Laos. The **development and delivery of trader education** in various formats will be trialled during 2010 and 2011 as a means of reducing disease spread. It is hoped that a better understanding of disease behaviour may discourage some of the high-risk trading practices that were identified during interviews with the livestock traders. The ongoing contact with Cambodian and Lao trader networks that will be provided by the project's trader education activity is also intended to increase the opportunity for the Cambodian and Lao governments to consult with this important stakeholder group when developing policy and protocols associated with the livestock trade.

A risk pathway workshop was co-hosted by the project at the 8th Meeting of the Lower Mekong Working Group in November 2009. This workshop built on information collected from traders about trade routes, trading practices and trader networks. Important risk pathways have consequently been identified, together with 'critical points' along those pathways where disease reduction interventions might be attempted.

Increasing the **range of crops grown under rainfed lowland conditions** by promoting non-rice crop technologies that provide efficient water use and high financial return to the growers is the major focus of a project. This aim is being achieved by adding a non-rice crop after the main wet season rice crop. The key research issue is water—how to select the appropriate soil and water environment in the wet season for the follow-on non-rice crop (particularly peanut, soybean and mung bean) and how to ensure adequate water for the crop. The intended target group of the project is small-scale lowland rice farmers with favourable on-farm water availability. Limited amounts of water may be available from underground or on-farm ponds as supplementary irrigation to non-rice crops. Assessment of cropping risks and economic evaluation of new technologies are two key aspects of the project.

In the first year (2007–08 dry season) the project team identified that Prey Khmer soil was most suitable for legume crops after rice in lowlands, followed by Prateah Lang soil, which is the most common soil type in the lowlands of Cambodia. The team also found that **peanut was the most suitable crop** in terms of vigour and yield, followed by mung bean, among the three crops examined. The team also noted a number of constraints for achieving high legume yield, including: adverse effects of low soil fertility; requirements of furrow and bed planting for some soils; potentially large impacts of insect pests and diseases; and difficulty in providing a sufficient amount of irrigation water to maintain optimum crop growth.

Some of these issues are strongly connected to labour availability and cost of appropriate field maintenance. The team capitalised on these observations in developing a series of experiments that were conducted in the 2008–09 dry season to **determine the best options for legume growing** in terms of irrigation water requirement, effect of mulch, time of planting, and use of fertiliser and soil amendment. The project also maintained two model farms that had been developed in the first year

with farmer owners—one in Kampong Thom and the other in Takeo—and developed an economic analysis of model farm activities. A cost–benefit analysis of legume cropping after rice in lowlands was also undertaken. The analysis clearly indicated the adverse effect of labour cost on profitability of growing legume crops, particularly for watering by hand, which is common in the area.

From the results of experiments and economic analysis, the team has developed the best-bet technologies for growing mung bean and peanut crops. In the 2009–10 dry season 20 demonstration farms have grown these two crops as well as tomatoes using the best-bet technologies. Anecdotal evidence suggests that some of the farmers are producing very good crops of mung bean and peanut. The team also had a field day at Takeo, where some 100 people (mostly farmers) came to inspect the model farm experiments on irrigation frequency and mulch levels and see demonstrations of drill-planted legumes. Some commune chiefs were also invited from other areas and they showed strong interest in participating in the project in the future.

Studies of bananas have moved from focusing on disease management to integrated farming. Scientists are evaluating **soil areas where bananas avoid disease**, having found positive differences where bananas are grown in certain soils. Further investigations are trying to determine the exclusive qualities of what the scientists have termed 'suppressive' soils.

Helping communities adapt to climate change

Cambodia, Lao PDR, Bangladesh and India are particularly vulnerable to climate change. All four countries have a high exposure to climate risks such as increased flooding in lowland areas, increased numbers of extreme weather events and shifts in seasonal weather patterns.

Resource-poor smallholder farmers are typically the most vulnerable as they have the lowest levels of adaptive capacity. This is compounded by weak institutional capacity to implement effective adaptation programs and a lack of robust multiscale adaptation strategies at the policymaking level.

An ACIAR project seeks to bridge the gap in these countries between national-scale assessments of climate change vulnerability and impact, and adaptation interventions at the household and community levels. While the former approach provides strategic insights into sectoral and regional vulnerabilities, it offers no advice on either the resilience or adaptive capacity of sectors and regions, or any practical information to enable adaptation at the household or community level. Conversely, the latter approach is constrained by the difficulty in scaling household- or community-level information to higher levels (e.g. provincial or national).

The aim of the project is to develop multiscale adaptation strategies and demonstrate processes that enable policymakers to deliver more-effective climate adaptation programs relevant to farmer livelihoods and food security. At the same time, the research teams will help to build capacity of farming households in selected regions of Cambodia, Lao PDR, Bangladesh and India to adapt their rice-based cropping systems to climate variability and climate change.

The research program has been tailored to suit each individual country, but the researchers are aiming to generate similar datasets for valid comparison. From these studies they will derive a suite of multiscale adaptation strategies applicable at provincial or national levels in the four countries. This approach will also allow for cross-country comparison and enable extrapolation of more-general findings to other countries, including Australia.

Lao PDR

Position

Distinguishing features of this landlocked country are low population density, high ethnic diversity, poor infrastructure and geographical dispersion of the people. Agriculture employs over 80% of the population and contributes 53% of GDP, but at least one-third of the population remain below the poverty line. There has been economic growth since 1999, with major exports of garments, timber and wood products, gold re-exports, hydroelectric power and coffee. Despite overall national self-sufficiency, seasonal rice shortages occur regularly in several provinces.

ACIAR's program supports research that underpins the Lao PDR Government's objectives of identifying and implementing alternatives to shifting cultivation in upland regions. ACIAR fosters technical interventions to improve the profitability of low-input household farming systems as an alternative to shifting cultivation, and supports research to improve the productivity of lowland farming systems. Maintaining and increasing rice yields remain critical to improving food security and incomes in the country, and ACIAR supports applied research that lifts productivity of irrigated and rainfed rice-based farming systems and diversification into other crops.

A key thrust of ACIAR's Lao program recognises the vulnerability of agriculture in the Mekong Basin, particularly rainfed cropping, to climate variability and change. A new program linked to research in other Mekong Basin countries is assisting adaptation to climate change at the farm scale, emphasising more-efficient use of soil and water resources. Emphasis at this scale complements other programs on water and climate change at catchment and whole-of-Mekong-Basin levels, which are supported by AusAID and other donors.

In 2009–10 ACIAR formed partnerships with specific programs of the International Fund for Agricultural Development, the Asian Development Bank and the World Bank to support underpinning biophysical and agribusiness work focused on rice-based farming systems in southern Laos. There is also a strong emphasis on assisting with capacity development for the research and extension systems. Where appropriate, research interventions are tailored to complement AusAID activities and other larger donor programs related to improving rice production, forestry, animal health and production, and climate change.

Achievements

The Lao Agricultural Research Fund (LARF), funded by the Australian Government through ACIAR and AusAID, has given **Lao scientists access to research funds** for smaller development programs consistent with the national agricultural research and development guidelines for the country. During the period October 2009 to February 2010 they had opportunities to develop and submit for funding consideration research proposals of 1–3 years' duration, with a project budget limit of US$12,000. Proposed areas of research included crop production, livestock production, fisheries research, forestry systems research, natural resource management, integrated agricultural systems research, and economic and socioeconomic studies relating to agricultural production. Research funding agencies from Switzerland and Sweden have adopted the LARF model and are introducing their own programs of research support.

In the field of animal health, work is underway to improve the **management of zoonotic diseases** (diseases spread from animal to human) associated with pig production and pork consumption in Laos. Meat and slaughterhouse surveys were undertaken and local staff were trained during the process to take over the task from project staff. The survey identified a number of parasitic worms, some of which can cause serious human disease.

Much of ACIAR's research effort is directed towards **increasing smallholder farmer income**. A project in Laos seeks to do this through increased cattle productivity, and increasing adoption of forage fodder banks to improve feed quality and availability while reducing the time associated with feeding cattle. The adoption of forages for feeding to cattle has exceeded expectations. The average

time saving is 2 hours/day and can be up to 8 hours/day. This has potentially profound social and community impacts since fathers and children undertake cattle feeding. This time saving presents opportunity for farmers to increase their off-farm income and for school children to increase their study time instead of feeding cattle.

As in neighbouring countries, ACIAR is endeavouring to improve the productivity and profitability of Laos's dominant lowland rice-based cropping system, and to pursue diversification in suitable locations by **adding non-rice crops under irrigation** in the dry season. The project has encouraged farmers to participate in varietal selection of rice, teaching them to look for differences in eating quality as well as cropping performance. Farmers were also involved in testing options for experiments and demonstrations in direct seeding of rice. While broadcasting is the farmers' preferred option due to the reduced labour requirement for crop establishment, this may not be suitable where weeds are likely to be a major problem and labour is limited. The team successfully conducted on-farm demonstrations of drum seeders in three districts. The fields planted with the drum seeder looked very uniform and farmers using the drum seeder are confident of its benefit. Other studies are encouraging the use of legume crops, evaluating performance under different fertiliser and tillage regimes.

Fish is the main source of animal protein in Laos. The Lao PDR Government is trying to **increase fish production** so that the people receive about 23 kg of fish per head per year. An ACIAR project is helping to optimise yields from seasonal water bodies such as floodplain depressions and reservoirs for culture-based fisheries, a practice that requires little or no capital inputs and harnesses the natural productivity of these water bodies for augmenting fish production. The project is improving the culture of many of the fish species favoured by farming communities, developing best practice approaches and production models to improve yields and lift economic benefits to village communities. Culture-based fisheries at the project site are yielding excellent results and creating a great deal of local interest, triggering communities from two other provinces to adopt similar activities of their own.

Recent work by the Mekong River Commission has demonstrated that valuable commercial and subsistence fishery stocks undertake migrations that are significant for their survival, growth and reproduction. In-stream barriers such as weirs hinder the movement of migratory species and therefore threaten the future of these vital fisheries. In other areas of the world fish passage facilities are incorporated into the design of weirs, based around movement patterns of selected fish species. Very little is known about the movement of these local species, and a project is in place to learn more so that **criteria for fish passage for lower Mekong species** can be established. The project team is constructing an experimental fishway and training local communities to become involved in fish passage research.

Photo: Colin Piggin

Dr Latsamy Boupha, Vice Dean of Faculty of Forestry, National University of Laos, is presented with her John Dillon Memorial Fellowship Award by then Parliamentary Secretary for International Development Assistance,Bob McMullan, March 2010.

Livestock research gets a boost

Viengxay Photakoun recently completed a Masters degree at the School of Environmental Sciences at Charles Sturt University with support from the ACIAR John Allwright Fellowship program. He will return to Laos with some firm views on how to build the capacity of agricultural extension officers to benefit livestock producers.

Before coming to Australia, Viengxay worked on an ACIAR project introducing fodder crops for livestock production in the uplands of Laos. He worked closely with Dr Joanne Millar, who has a special interest in developing successful extension methods.

Viengxay, who had previously studied English at the University of Canberra and in Vientiane, came to Australia to complete his Masters with Dr Millar. In his Masters degree Viengxay investigated ways to build institutional capacity to implement participatory research and extension in Laos. On his return he is expecting to work for the National Agriculture and Forestry Extension Service, which is responsible for extension services for livestock and fisheries.

Viengxay believes that livestock is a key component of addressing food security in Laos. 'Laos is an undeveloped country where more than 30% of people are poor farmers. Raising livestock is an important component for farmers', he says. 'In upland areas livestock provides about half of a farmer's income. So livestock can contribute to reducing poverty, and can slow shifting cultivation and support the Lao economy.'

'My responsibility has been with the extension approach. Links between research and extension can help farmers get an impact from research; for example, by involving more farmers in a project, they can expand the impact on a large area from family to family, from village to village, from district to district, and from province to province.'

The desire to create a lasting impact was shaped by Viengxay's village childhood. 'I came from a small village near the capital Vientiane which only offered schooling until Year 3. From then I walked around 10 km each day to get to and from primary and then secondary school in a neighbouring village', Viengxay says.

'When I was young I used to read about people living in countries like France. I wished I could study overseas. Well, my dream has come true and I am very proud, as is my family and my village.'

Thailand

Position

As Thailand's own economic and research capacities have continued to increase, the ACIAR–Thai relationship has shifted towards co-investment in research partnerships. ACIAR's current program with Thailand focuses on three issues: implementation of the results of earlier projects, with relevance to the poorest farming communities; biosecurity systems implementation; and regional partnering with Lao PDR. Based on themes identified at a joint forum in November 2006 supported by the Australia–Thailand Institute, four new projects were designed and implemented in 2007–08 and continue today. They focus on plant biosecurity, including molecular identification of quarantine pests; development of fish passage technology; livestock biosecurity, with an emphasis on improving vaccine quality and disease management systems; and working with poor communities to improve rice production on poor soils in north-eastern Thailand (with NGO collaboration).

Achievements

ACIAR and World Vision Foundation of Thailand have worked together since 2001 to foster greater application of the results of earlier ACIAR-funded research. A current project that follows this model focuses on **improving the reliability of rice–livestock-based farming systems** in Mahasarakham province in north-eastern Thailand, one of the poorest parts of the country. Research work has revolved around improving livestock production by demonstrating the usefulness of a range of forage grasses. However, some work was also conducted on livestock health and cattle-fattening techniques. With support from Khon Kaen University and the project advisory team, the project collected data to compare cattle growth using the recommended improved technologies with that of traditional techniques.

For rice production studies the project provided two varieties of seed to enable farmers to compare them and decide which of the two best suited their circumstances. Other activities included growing legumes with trials to test the effects of a variety of fertilisers on yield. The team held demonstrations to show the positive impact on yield of **incorporating bentonite clay into sandy soil**. However, work on aligning broadcast rice seeds into rows to reduce weed ingress was cancelled due to heavy early rains. Studies on alternative production systems and weed management will continue in years with more-typical rainfall.

In line with a Thai–Australian agreement to jointly focus on plant biosecurity, a project is in place to introduce technological research and training for **improved pest diagnostics** in the two countries. In the case of taxonomic training, two Thai scientists have trained in Australia in areas of specific interest to plant quarantine—the identification of exotic nematodes and of exotic fungi and bacteria associated with export seed. Molecular training is the most intensive component of the project and is undertaken in specific areas that relate to pests of important industries in Thailand. They include molecular diagnostics for fruit fly, citrus canker, black spot, potato spindle tuber viroid and general virus detection.

Scientists at the Thai Department of Fisheries have gained much recent experience with fish passage technology by studying how to keep watercourses open to enable fish to migrate to and from spawning grounds up river. They are now contributing to a Lao-based project to **develop criteria for fish passage of floodplain species** of central Laos. The information gained from their own investigations has contributed to the design of an experimental fishway in Laos that will facilitate fish movement.

Burma

Position

ACIAR's program with Burma developed after exploratory visits in 2002 to determine the feasibility of collaborative research activities. The first projects commenced in 2003, but the current international situation means that development of new projects is on hold. There have been limited opportunities to pursue new activities through multilateral organisations, and currently there is one project led by ICRISAT to improve the productivity of legumes.

ACIAR's strategy in Burma is to develop a small number of multilateral collaborative research projects that can have impact on improving nutrition and food security, either directly or through increases in farmers' cash incomes. Particular regard is given to the humanitarian needs of Burma, which aligns the ACIAR program with the focus of the Australian aid program in Burma. This approach is in recognition that over one-third of young children in Burma are moderately or severely underweight. Even though the nation is self-sufficient in food on an overall basis, many families spend 70% of their income on food, and prices are rising. Projects are based in similar agroecological zones to those in Australia—the central dry zone and tropical lowlands. There is a strong need for training due to the isolation of many of Burma's agricultural scientists from international cooperation over recent years.

Although there has been rather limited international development cooperation in agriculture with Burma since 1988, several trained researchers and basic facilities are present to allow effective cooperation. Burma has already benefited through the Food and Agriculture Organization (FAO) of the United Nations from the spillover of other ACIAR projects in the region, most notably vaccines against Newcastle disease in chickens, and improved legume varieties and their inoculation with nitrogen-fixing bacteria.

Achievements

A project to increase food security and farmer livelihoods through enhanced legume cultivation in the central dry zone of Burma involves ICRISAT as the commissioned organisation. Now, at the end of its third year, the project has progressed in accordance with its work plan. Farmers have identified a number of promising varieties and appropriate management practices for the three **food legumes under investigation—peanut, chickpea and pigeonpea**. Farmer interactions with researchers have highlighted some of the main constraints to increasing productivity, namely moisture stress and the non-availability of good-quality seed.

In February 2010 a workshop was held in Yezin with the participation of the project team and the main stakeholders. It was a good opportunity to evaluate the progress made so far in the project and discuss issues such as how to **increase the quantity of high-quality rhizobial inoculants**, the conduct of farmer participatory varietal selection, village seedbank activities, low-cost production technologies, storage pest management and training activities.

SOUTH ASIA

India

Position

India faces significant problems in its rural sector, even as the overall economy forges ahead. The greatest numbers of poor and undernourished people in any country (approximately 300 million) are found in India, and most live in rural areas. At the same time, India faces trade liberalisation and rapid diversification of diets towards high-value agricultural products.

ACIAR's collaborative program in India has evolved into a tightly focused suite of projects in four subprograms. The emphasis of the India–Australia collaborative research partnerships in the main wheat-growing areas focuses on improving productivity through development of new varieties resistant to major biotic and abiotic stresses. The second subprogram concentrates on improving cropping systems productivity, including technologies for zero tillage of wheat, direct-seeded rice and management of other crops for improving diversification.

In the less favoured areas of India's rainfed central plateau, a second subprogram addresses broad-scale land and water resource management. This is augmenting the earlier technical focus with complementary research on cropping systems, and institutional and policy issues related to water management. This subprogram applies technical, economic and policy research approaches to increase water productivity, and is adopting an increasing focus on climate issues—in particular, adaptation to climate change. The fourth subprogram focuses on policy options for trade and market reform to underpin agribusiness development.

A number of International Agricultural Research Centres (IARCs) collaborate with ACIAR in India. They include ICRISAT, with headquarters in Hyderabad; the International Livestock Research Institute (ILRI); CIMMYT; and IRRI. The International Water Management Institute (IWMI) collaborates on water policy issues. ACIAR supports projects with all these international centres.

Achievements

This first project, developed using the new Indo–Australian program on marker-assisted wheat breeding modality, concerned increasing the **water-use efficiency and yield of wheat** in the rainfed and minimally irrigated regions of Australia and India. New breeding lines with deeper root systems that better exploit moisture stored in the soil, and with desirable characteristics to enhance crop establishment were developed. A diverse team of physiologists, agronomists and breeders in southern and northern Australia has been assembled to collaborate with a team of leading breeders in India to undertake the program. The teams have become integrated around a core germplasm collection, common target traits (roots and establishment), common controlled environment and field measurements, and joint data analyses.

Another project seeks to enhance farm profitability in north-western India by **improving grain quality of wheat**. The project deems it important to develop a production and marketing culture that recognises quality attributes and determines how these can be achieved and rewarded. After 2 years of field experiments, the team has identified practices that farmers can adopt as part of an integrated system for enhancing both wheat quality and yield. The project has determined best practice techniques for chapatti-quality flour: early November sowing, variety choice, zero tillage, micronutrition (particularly zinc and sulfur), and strategic nitrogen fertiliser that is integrated with irrigation management.

A third project addresses improvement of wheat to **combat waterlogging, salinity and element toxicities**. Both Indian and Australian partners have successfully conducted field and controlled environment trials, exchanged and developed new germplasm, developed soil characterisation protocols, characterised germplasm to establish tolerance to abiotic and biotic stresses, and identified further adaptive traits relevant to key interacting constraints in target environments. A second research strategy of this project is the comparison and development of new germplasm with a genetics-based approach using two methods—single seed descent and doubled haploid production. This approach is well on track, with populations now selected for the diverse environments in India and Australia.

Another project under the major India–Australia research umbrella is seeking molecular markers to broaden the **genetic base of stem rust resistance genes** effective against Ug99, a strain of rust that has the potential to wipe out wheat crops around the world. Encouraging progress is being made using a robust molecular marker for the stem rust resistance gene Sr22, known to be effective against the Ug99 strain and derived lineages as well as Indian and Australian isolates. The marker has proven to be highly diagnostic for the presence or absence of Sr22 resistance. Following validation of the utility of the marker, the information required for its utilisation in marker-assisted wheat breeding has been disseminated to participating scientists/institutions in the India–Australia wheat improvement program.

Sorghum grown in India in the dry season (Rabi) relies on residual soil moisture, and the crop is commonly **exposed to terminal drought stress**. But there is a ready market for its high-quality grain and stover (used as fodder on dairy farms). Steps to improve productivity while maintaining quality offer an attractive opportunity for sorghum farmers to improve their incomes. Genetically improving the plant's efficiency to use stored soil moisture provides a prime target to maximise grain/stover production and quality of Rabi sorghum. A project to achieve this through the application of DNA-based technologies is achieving promising results for introgression of 'stay-green' into sorghum lines, enhancing both the quality and quantity of grain/stover of post-rainy sorghum. Trials at both ICRISAT and partner locations have registered an excellent expression of the stay-green phenotype, and the results enable a clear discrimination of the stay-green introgression lines.

Zero-tillage technology helps to improve crop yields, reduce water use and boost levels of soil nutrients.

During 2009–10 excellent progress was made against all the objectives in the project 'Zero-tillage rice establishment and crop–weed dynamics in rice–wheat cropping systems of India and Australia'. The project seeks to identify and develop **suitable establishment systems for direct-seeded rice** (DSR) as an alternative to the traditional hand-transplant system. Several field research sites were established across states of Haryana, Punjab and Bihar, and 581 farmer sites demonstrating DSR technology were also established. Work is now focusing on which methodologies are best for direct seeding—optimal sowing times and seeding rates, the best rice varieties to plant, identifying the invasive weed species and determining how to manage them, and optimising nitrogen fertiliser management.

On the East India Plateau rainfall is in excess of 1,200 mm a 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 run-off levels and little, if any, water harvesting practised. Cropping intensity is low, with one crop only per year, timed to maximise available water. A project is seeking to lift regional productivity by introducing watershed management, including water harvesting, along with better cropping and agronomic practices. The project team is employing participatory action research to **develop principles and improved practices for watershed development**. Villagers participate in a learning cycle (plan, do, observe, reflect), which guides the overall project and most activities. For instance, in the Purulia district a program is destined to reach 5,000 families in 2010. The team has found that an adult-learning approach rather than demonstrations of technological packages facilitates complex change, fosters independence and minimises NGO dependency. Resource-poor families are being helped to envisage improved livelihoods through agriculture, plan new farming systems including a range of crop options, and develop locally relevant practices that make better use of their resources. This program takes radically new ideas arising from the project to large numbers of people using the resources normally available to an NGO.

Watershed development programs in rainfed dryland agriculture in India have been introduced to ensure the **sustainability of the surface water and groundwater resources** and to improve the livelihoods of farmers. These programs have been applied at the micro-catchment or village level (up to 500 ha) but a question remains on the level of return in relation to investment at meso-basin levels (around 5,000 ha). Water retention or groundwater pumping in one locality may negatively affect access to water or water management, generally at a larger scale, but this may be difficult to detect at the micro level. A project has taken the first steps to provide an integrated evaluation model including hydrologic, agronomic, environmental, economic and social equity issues. It is designed to have a number of stand-alone input models and to deal with scale from the household to the village and through to the broader watershed scale. This model will guide future research and be iteratively revised as the team's understanding of the multifaceted, interactive processes evolves, and data collection and analysis continue.

Tapping the potential of the monsoon

Farmers working land on the East India Plateau are among the poorest in India. Traditional farming practices are based around the annual monsoon, with rice crops planted to coincide with those rains. The rice is harvested from farms less than 1 ha in size on low-lying land.

Most families are faced with not growing enough food, and it is common practice for men to emigrate in search of seasonal work to supplement meagre incomes. Women are left to undertake the roles done by men, but they lack support and resources, especially labour and access to technical know-how.

One place where technical know-how exists is the rural development organisation, Professional Assistance for Development Action (PRADAN), which had trialled water-harvesting technology to capture run-off and tap shallow underground water sources. Such technology can be very effective in areas with high seasonal rainfall, such as those that experience the monsoon season.

The difficulty for farmers of the East India Plateau is that enough rain falls for two rice crops, but almost all that rain falls in one concentrated period. Water-harvesting technologies present an opportunity to extend the benefits of that rainfall across a much longer period of the year.

ACIAR developed a project linking scientists from the University of Western Sydney and the Australian National University with the Indian Council for Agricultural Research, Research Complex for Eastern Region and PRADAN.

The aim of the project was to test the PRADAN water-harvesting technology—a network of storage pits in the uplands with channels to funnel water to those pits, allowing increased infiltration of monsoonal rain that could be accessed later using seepage tanks in low-lying areas near villages.

PRADAN also worked with villagers to ensure local participation, using participatory methods to ask farmers, particularly women, to identify research questions and carry out field trials.

In Pogro village a village core committee (VCC) comprising self-help group representatives was established to improve project implementation and build social capacity, shifting ownership, responsibility and control to the villagers. The model helped women in the village lead changes, such as managing weeds through planting techniques, to support the water-harvesting network.

In Pogro the VCC oversaw (with project support) the initial implementation of the watershed development plan, along with the introduction of improved rice varieties that mature faster, allowing a second crop, such as mustard or wheat, to be planted in rice paddies.

The results have included dietary improvements and additional income. This has allowed some Pogro villagers to own houses and livestock for the first time and to spend money on education materials and books for their children. Perhaps the most important change is strengthening family units, as the ability to generate income in the village is helping prevent the seasonal exodus of men in search of work.

Pakistan

Position

Pakistan has been an ACIAR partner country since 1984. ACIAR's long-term focus in Pakistan is on natural resource management issues such as efficient water use, salinity and drainage, and tillage options for irrigated cereal cropping. ACIAR has broadened the program of bilateral and multilateral projects in Pakistan to encompass the horticulture and dairy sectors. The broadened focus arises from the Australia–Pakistan Agriculture Sector Linkages Program (ASLP), which ACIAR is implementing on behalf of AusAID. The geographic focus in ACIAR's Pakistan program, including work carried out under the support of the ASLP, is on Punjab, Sindh and North-West Frontier provinces.

The main anticipated outcome of the ASLP is to build stronger capacity in Pakistan to exploit agribusiness opportunities in the targeted sectors, with the dual purposes of underpinning the current high growth rates in the agricultural sector and contributing to poverty reduction. The current phase concluded in March 2010, and it will be extended until March 2014 after a favourable review.

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 its own water resource and salinity issues, Australia is well placed to assist Pakistan in addressing these issues. ACIAR's program continues to focus on irrigation, drainage and salinity management in the major cropping systems.

In addition, there is recognition that Australia has skills for working with some of Pakistan's key horticultural crops, especially citrus and mangoes, the two most important tree crops. Pakistan is also one of the world's largest milk producers, with slightly less than half of its production from dairy cattle. Major opportunities exist for applying Australian expertise in animal nutrition and integrating forage production into farming systems to assist in improving milk production. This work is key to poverty reduction, particularly for some of Pakistan's landless people.

Achievements

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 limiting the **efficiency, effectiveness and competitiveness of supply chains for Pakistan mangoes**. A series of experiments has addressed the issues of optimum storage, best ripening procedures, assessment of harvest maturity and identification of postharvest diseases for the two main commercial mango cultivars, Chaunsa and Sindhri.

The project team has initiated the search for new markets for Pakistan mangoes. China was identified as a potential market in 2007. After 40 kg of Pakistan mangoes were carried into Beijing and Guangzhou in September 2008 to test the market response, four supervised trial shipments were undertaken in 2009, each of 1,000 kg of Chaunsa mangoes. The fruit quality was acceptable and sold at premium prices. These experiences and the linkages developed through this activity encouraged chain members to plan for future seasons. In 2010 they agreed on shipments throughout the season, starting with the Sindhri variety in June.

Pakistan has set an annual export target for citrus of 500,000 t within the next 5 years, and A$300 million in export earnings by 2013, but some key constraints need to be addressed to achieve these ambitious targets. ACIAR support is helping to **improve mandarin and orange productivity** in Pakistan and Australia through improved nursery production practices and production; demonstration of best practice orchard management; and enhanced research, extension and production capacity of Pakistan citrus institutions and industry. Citrus orchard practice has moved from flood irrigation to furrow irrigation, with great savings in water. Productivity will also increase as producers change from working by the calendar to working according to phenology (growth stage) of the crop.

Milk supply in Pakistan has increased by more than 5% per year over the past 15 years, but demand is anticipated to more than treble by 2020. An effective extension service can contribute to reform of the industry, but at present there are too few extension officers and they typically receive inadequate training. Farmers struggle to boost on-farm efficiency because the relevant information is neither disseminated nor adopted in the farming community. An ASLP project is designed to demonstrate the economic and social benefits of improved extension services to smallholder dairy farmers. Field extension workers and farmers have been introduced to the key fundamentals that **contribute to high productivity from cattle and buffalo**. They also learn the principles of feed and water management, cow health, calf rearing and reproductive management through the development of effective inter-personal relationships. The changes in productivity, carefully measured with bucket and scales, have related directly to changes in farm income.

The Punjab Irrigation and Drainage Authority in Pakistan operates and maintains one of the largest irrigation canal systems in the world. However, the system now requires major rehabilitation and improvement to meet present-day demands. Recent analysis shows that **the inequity of water distribution** between the beginning and end of a system is closely correlated to decreasing yields and increasing salinity with increasing distance from the canal. An ACIAR project team is developing tools capable of analysing hydrological and economic water management trade-off scenarios. This project is developing and using hydrologic–economic modelling tools for the first time in the history of canal and groundwater management in Pakistan. These tools are capable of scenario analysis of water distribution as a function of crop–groundwater–soil mix at farm and 'distributary' and 'minor' canal levels. The project is also coupling remote-sensing tools and hydrological data with socioeconomic data as a means of developing surface water and groundwater supply-and-demand management options at various spatial scales, to enable tailoring the adaptations of different water sectors to climate change.

ASLP continues to deliver

The Agriculture Sector Linkages Program (ASLP) commenced in July 2005 as a $6.6-million 4-year initiative funded through AusAID. The ASLP aims to transfer Australian knowledge and expertise to key sectors of Pakistan agribusiness. This will increase profitability, enhance export potential and contribute to poverty alleviation of smallholder farmers through collaborative research and development. One of the key outputs of the program is to enhance the capacity of Pakistan's research, development and extension system to deliver targeted and practical research outputs to agribusiness and farmers.

The ACIAR-led ASLP comprises clustered interventions in the dairy, citrus and mango industries. A mid-term review of ASLP had high praise for these interventions, finding that they had addressed significant opportunities for Pakistan by capitalising on important Australian research strengths. The work proved to be a high-profile engagement, achieving a level of recognition well above what would have been expected for such a modest scope and budget.

The first phase of the ASLP concluded in March 2010. ACIAR has worked with AusAID to design a 4-year second phase. This will build on the outputs of the current projects but there will be greater emphasis on impact, dissemination of results and uptake of the outputs and new technologies. There will also be an enhanced focus on poor and disadvantaged regions.

Bangladesh

Position

Bangladesh has been a partner country of ACIAR since the mid 1990s. ACIAR's program is comparatively small, in view of Australia's 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 system) and the potential for increased inclusion of a legume component in cropping systems. This past focus is broadening with the emergence of rice–maize as an increasingly important cropping system. However, it is recognised that the national focus on rice can compromise nutrition and, as such, work on improved pulse productivity and availability is continuing.

With re-emerging concerns about Bangladesh's ability to maintain food security in the light of its high vulnerability to the impacts of climate change, the emphasis is shifting to increasing the productivity of rice as the main staple. The effects of seasonal climate variability and of climate change particularly impact low-lying areas and rainfed cropping systems in Bangladesh. Consequently, Bangladesh is one of four partner countries involved in ACIAR's climate change adaptation initiative.

Achievements

In Bangladesh the rise in demand for maize—as human food and from the poultry and fish industries—has led to a trend away from traditional rice–rice and rice–wheat cropping systems and toward rice–maize systems. But actual farm yields of rice and maize fall below their potential. A project aims to **introduce sustainable cropping intensification** that can lead to double- or even triple-cropping rice–maize systems. The project builds on existing linkages and experience from IRRI, CIMMYT and ACIAR projects in Bangladesh and other countries in South Asia. It links with two other ACIAR projects—one addressing legume constraints in cereals-based cropping systems and the other developing conservation farming implements. The project is adapting and using the zero- or strip-till drill and other machinery from those projects.

Farmers from Khanjipur village in southern Bangladesh assist the ACIAR project team collect soil samples for water and nitrogen testing.

Extensive trials are underway involving many scientists and village farmers in surveys and trials. The teams receive feedback from farmers and other stakeholders about adaptive research and demonstration trials, which they then use in refining and redesigning the trials. Promising hybrids selected from the previous year's research were evaluated under conservation agriculture (zero tillage—ZT, strip tillage—ST, minimum tillage—MT, raised beds—RB) at three project sites during the Rabi (the dry) season in 2009–10. A locally made farmers' implement was used to make shallow slits for sowing in ZT, a power-tiller-operated seeder for making strips for ST and MT, and a bed planter for sowing on RB.

High world wheat prices and the need to import more than three-quarters of domestic demand has renewed interest among Bangladeshi farmers in wheat as a Rabi cropping option. Over the past 10–20 years wheat production had lost favour among farmers due to reductions in yield resulting from increased disease pressures and the relative attractiveness of alternative Rabi crops, particularly Boro rice and vegetables. Historically, wheat has been grown in the north of the country; however, an ACIAR project focused on the south. The southern region had been considered unsuitable for wheat production until FAO-funded research in 2003–05 achieved yields in excess of 2.5 t/ha with new, disease-resistant varieties grown using appropriate agronomic practice. The ACIAR project built on this work, exploring options to improve management of resources, including irrigation and nutrients, and to **adapt farm management to deal with specific local constraints**. There was also a broadening of research focus to include other Rabi cropping options, particularly pulses such as mung bean, and an increased emphasis on the extension of research findings to the southern Bangladesh farming community. Wheat yields of 3.0–4.5 t/ha have been consistently achieved over the 4 years of research.

Bangladesh, together with Cambodia, Laos, and India, are among the Asian countries most vulnerable to climate change. A project just commenced aims to develop strategies for policymakers so that they deliver climate adaptation programs more relevant to farmer livelihoods and food security. More information is available in the box adjacent to the Lao PDR country report.

BHUTAN, AFGHANISTAN AND IRAQ

Bhutan

Position

Because of Bhutan's relative lack of capacity to effect significant change across many agricultural sectors at once, ACIAR's program remains small and tightly focused. 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 footrot management in ruminants. A new major initiative focuses on improvement of citrus production and pest and disease management.

Achievements

The Bhutanese Government wishes to substantially increase the country's production of citrus (mainly mandarin)—from the current annual total production of 36,000 t to, hopefully, export 100,000 t annually. A project seeks to lift overall productivity of Bhutan's citrus on a sustainable basis and improve the quality and yield of its present mandarin cultivar.

During 2009–10 the project continued to implement improved management practices on project demonstration orchards. Trials to assess the effects of the plant hormone gibberellic acid on mandarin rind quality and fruit maturity were undertaken in 2009 and continued in the 2010 season. One positive but unexpected result was that treated fruit did not develop postharvest moulds, compared with untreated fruit.

Improved management practices continue to be implemented at all four project demonstration sites, with the continued application of chemical fertilisers and the use of pest control measures and canopy management practices. Soil moisture monitoring equipment (tensiometers) installed at the Rimchu demonstration site has continued to provide valuable soil moisture data throughout the growing season.

In April 2010 two project personnel from Australia travelled to Bhutan to establish a permanent drip irrigation system at the Rimchu demonstration orchard in the Punakha district. In Bhutan the majority of orchards, being located on the mountain slopes, do not have a permanent water supply on farm. Providing irrigation to tree crops throughout the growing season is uncommon and any watering is usually done by hand. A novel pump that uses stream flow to pump water was sent to Bhutan from Australia and successfully installed.

Afghanistan

Position

Two decades of war, coupled with a recent severe drought, have devastated Afghanistan's food production capabilities and depleted critical seed stocks, leaving the nation heavily dependent on food aid from international donors. ACIAR's collaboration with Afghanistan, which started in 2002, provides support to wheat and maize production. Wheat is by far the most important crop, while maize is the third most important. Activities have aimed principally to import seed from suitable cultivars, establish on-farm participatory testing of imported germplasm for the identification of better-adapted improved cultivars, and undertake local multiplication and distribution of selected cultivars. Particular attention is being paid to capacity building, improving rust resistance in wheat (with specific attention to the new stem rust strain Ug99) and promoting improved crop management, along with provision of improved cultivars of both wheat and maize.

Achievements

The project to boost sustainable wheat and maize production in Afghanistan is progressing steadily. In the wheat component three new wheat varieties resistant to the highly destructive rust strain Ug99 were released in 2009, and seed is being multiplied. In addition, promising bread wheat, durum and barley lines are in the pipeline for release. Lines of 11 stem-rust-resistant wheats were identified and sown in the autumn of 2009 for multiplication in 2010. The maize component has released three high-performing varieties originating from CIMMYT and they are being multiplied for wide distribution.

Progress has been made on establishment of networking and the strengthening of relationships with relevant partners via exchange of ideas, knowledge, information and germplasm. On-the-job training of partners continues. Further efforts are underway to overcome technical problems to developing technologies and on-farm testing and verification.

Iraq

Position

Iraqi scientists have had limited access to international developments in the agricultural sector for over 2 decades. Consistent with other support provided by the Australian Government, the ACIAR-managed, AusAID-funded projects are intended to facilitate the development of modern and sustainable agricultural production and marketing systems in Iraq.

Iraq's agricultural sector represents a vital component of its economy—it is the largest employer (25% of the labour force) and the second largest industry after oil (in terms of contribution to GDP). The 2-million-ha central–southern irrigated zone that produces vegetables and fruit as well as cereals is under increased pressure from salinity—approximately 75% of this region is reported to be moderately saline and the remaining 25% to have levels of salinity that prevent farming.

Ineffective and poorly maintained irrigation infrastructure, compounded by increasing levels of salinity of the irrigation water from both the Euphrates and Tigris rivers due to changed water regimes, has led to the current situation. ACIAR's project focuses on understanding salinisation processes, water management and the use of moderately saline soil for agricultural production. The project is funded by AusAID and managed by ACIAR, and is executed by the International Center for Agricultural Research in the Dry Areas (ICARDA), based in Syria, and Australian research organisations.

Achievements

The project in the drylands of northern Iraq aims to develop, evaluate and promote **conservation cropping technologies** involving zero tillage (ZT), stubble mulching, improved crop cultivars and better crop management. Project activity is focused in Ninevah governate.

ZT technology was first introduced into Iraq in an earlier project in 2006–07. In 2009–10 the known area of ZT crops has increased to 1,800 ha. In project-related development in Syria, where the technology was similarly little known or tested, total ZT area from project interactions was about 8,000–10,000 ha in 2009–10. A further 700 ha of ZT crops was grown in research and development projects involving Syrian research and extension groups. ICARDA has grown about 200 ha of ZT crops in trials and rotation / seed production areas.

The ongoing increase in awareness, research and development on the technology, the keen involvement of manufacturers and farmers in ZT seeder fabrication and testing and in taking up ZT, and the **higher yields and lower costs** being experienced provide a good foundation and confidence for wider adoption and impact. The more favourable year in 2009–10 has encouraged farmer enthusiasm and confidence in Ninevah and Syria.

The remote model of meeting in ICARDA is working well. A major driver towards conservation agriculture is the 100-fold increase in diesel prices. In capacity enhancement at ICARDA, there were 77 Iraqi scientist and technician training visits. Australian partners have delivered three of the courses, all focused on specific areas related to the project such as: socioeconomic planning and evaluation; geographic information systems (GIS) land use / cover mapping; crop management and postharvest operations in high-quality seed production; ZT plot seeder assembly, operation and maintenance; advanced design and analysis of experiments; best practices for collecting and conserving genetic resources; and participatory extension.

NORTH ASIA

China

Position

ACIAR commenced projects with China in 1984. Over the past decade the focus of ACIAR's program has shifted towards western China, in line with the need to raise farmers' incomes in this part of the country and to better manage land and water resources. This refocus of ACIAR's involvement has led to a concentration of available funding to achieve critical mass in joint projects, and to continuity of research in a region of high poverty and associated land degradation.

There is an ongoing related but broader emphasis to improve agricultural productivity in Tibet Autonomous Region (TAR). Both north-western China and TAR are confronting significant environmental challenges, and these are being addressed through projects that foster income growth for smallholders.

There are now significant human and financial resources available within the Chinese national agricultural research system. In recognition of the evolving nature of Australia's development assistance relationship with China, all new activities are taking the form of partnerships that include significant co-investment by the Chinese partners. There are many potential areas of research, but only a very small proportion of the highest priority projects can be supported. Those chosen must complement other schemes for China–Australia collaboration, including AusAID's Australia–China Environment and Development program. They must also be in a subject area where the overwhelming driver is Australian technical comparative advantage.

Achievements

In both north-western China and Australia conservation farming practices are being promoted as an important component of more-sustainable farming systems. The Commonwealth Scientific and Industrial Research Organisation (CSIRO) Plant Industry research centre has achieved considerable breeding success for dryland wheat in Australia by targeting specific traits that make more-effective use of available water. A project seeks to improve and stabilise farmer returns from **growing wheat in dry, rainfed environments** in north-western China by developing higher yielding wheat germplasm that makes more-effective use of water and soil resources. After two seasons of breeding and selection trials, Chinese scientists now have skills to screen for the traits of transpiration efficiency, coleoptile length, dwarfing-gene status, early vigour and root growth characteristics. Not only do these traits make the wheat more water efficient, but they are also important for its suitability in systems incorporating reduced tillage.

Xu Zhu and Tian Qingsong examine the meadow steppe at the Grassland Research Institute Field Station, Taipusi.

Chalkiness in rice occurs when there are high temperatures during grain filling and no breeding program has yet overcome it. Earlier research found that tropical rice germplasm (tropical japonica and indica) is more chalk-prone than temperate japonica germplasm. A project is now building on the earlier work to gain more insight into the genetic mechanisms of low-chalk in temperate lines and how to incorporate traits that will result in reduction of chalk in tropical breeds. Researchers have discovered that the expression of certain genes is influenced by high temperature, which is implicit in the development of chalkiness. They are now examining different rice lines to gain more insight into the genetic basis for chalkiness, and are growing material at different temperatures and under other environmental variables in order to define the conditions under which chalkiness develops.

The development of **integrated crop–livestock systems** has potential to alleviate poverty and reduce resource degradation in western China. Recognising this potential, Chinese government programs have introduced policies to replace cultivation on sloping land with perennial forages, promote conservation agriculture and develop livestock industries. However, there is a growing realisation that benefits will not be realised without the adoption of an integrated approach to research and development of crop–livestock systems, and steps are also needed to overcome some of the institutional barriers inherent in traditional research–extension pathways. A project to implement a participatory research program into forage production has undertaken studies to determine the best time and the optimum cutting height for lucerne harvest; and to identify the merits of dual-purpose (grain and graze) winter wheat and compare the performance of annual forage crops. Researchers found a significant opportunity for increasing harvestable lucerne forage by shifting to a harvest schedule based on appearance of first-flower; they also concluded that there was a large grain yield penalty from grazing winter wheat, and higher yield potential from summer forage crops compared with winter forages.

In addition, a **cashmere-goat-feeding trial** evaluated the influence of different proportions of lucerne hay in the diet on live-weight gain of weaned kids. The inclusion of lucerne in the diet increased the rate of live-weight gain compared with a diet comprising only maize straw and feed concentrate. Once lucerne was included in the diet, live-weight gains increased at a decreasing rate with any additional lucerne, which suggests the possibility of conserving lucerne and feeding it out gradually over the year rather than the current practice of feeding lucerne when it is green and growing.

Both local and central government identify increasing the output of dairy products in TAR as a high development priority. Current milk supply is well below demand and deficits are predicted over the next decade. Grain production in TAR, while sufficient to satisfy demand for human consumption, also needs to increase to support supplementation of livestock diets (particularly dairy cattle). A project directed at increasing household income and industry productivity, and developing **community-based initiatives in dairy, crop and fodder production** for farmers, focuses on the central valleys of TAR (Shigatse, Lhasa, Shannon and Linzhi prefectures). Researchers are seeking to understand and use the key factors affecting the adoption of improved technologies.

This project is the only international project in place with the Tibet Agricultural Research Institute (TARI). Two young Australian scientists are part of the project team located in TAR. Activities during 2009 included the establishment of research programs and on-farm evaluation of methods to improve grain, fodder and dairy production; and the enhancement of research and extension capacity in Tibet. Over the course of the year experiments were established at TARI to evaluate different varieties of triticale as winter-sown fodder crops and the productivity of different varieties of oats and maize as spring-sown fodder crops.

Researchers also assessed the **nutritional status of wheat and barley crops** in 16 fields across TAR's cropping zone. Results indicate that potassium, magnesium and zinc are marginal or deficient in many areas—a field-based response trial showed biomass and grain yield responses to foliar-applied potassium fertiliser. A crucial aspect of this new project is the emphasis on extension of technology to farmers. To this end, demonstration sites were established at two locations in 2008 and two new technologies have been successfully demonstrated in these areas. Zero-till seeding of vetch as a double crop was demonstrated over an area of 50 ha in Chang Dru village in July 2008, and zero-till sown cereal crops have been established for winter wheat at Dazi.

SOUTHERN AND EASTERN AFRICA

Position

Since 1983 ACIAR has completed over 40 projects in southern Africa. Currently, ACIAR has a small program in southern Africa that emphasises income generation in crop and livestock systems for emerging, previously disadvantaged farmers in the Republic of South Africa (RSA). The program is designed to assist farmers develop as entrepreneurs to capture the benefits of improved technology and then provide leadership to other groups. Benefits to date have included 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 difficult sites, identification of low-input fertiliser strategies for crops in risky environments, and demonstration that cattle breeds preferred by emerging farmers have growth potential that is equal to commercial breeds.

An underlying theme is sustainable use of natural resources, particularly with regard to croplands and communal grazing lands. Enhancing the engagement of African farmers with agricultural commodity markets is seen as an important means of increasing their incomes. ACIAR-supported research also aims to build the capacity of provincial agencies and to foster closer relationships between them and national institutions.

In 2009–10 ACIAR enhanced its engagement in Africa with a major new food security initiative in southern and eastern Africa to substantially boost agricultural production and improve market opportunities for farmers. The program will operate in five countries—Ethiopia, Kenya, Malawi, Mozambique and Tanzania—with the benefits expected to spill over into other countries in eastern and southern Africa. The new ACIAR program, entitled 'Sustainable intensification of maize–legume cropping systems for food security in eastern and southern Africa (SIMLESA)', was announced by the then Minister for Foreign Affairs, Stephen Smith, in April 2010. Partnerships with International Agricultural Research Centres (IARCs) and National Agricultural Research Systems (NARS) in Africa will help to achieve lower transaction costs and national-level collaboration. A number of agricultural research centres, including the International Maize and Wheat Improvement Center and ICRISAT, and partners, including the Queensland Department of Employment, Economic Development and Innovation, Murdoch University and the Agricultural Research Council of South Africa, will also provide support. A focus on arid and semi-arid farming systems and an emphasis on capacity building and training underpins this program.

Achievements

The South African commercial beef market has traditionally focused on producing beef from grain-finished young animals, largely supplied by European crossbreeds and adapted South African breeds. Emerging and communal farmers producing cattle off unimproved country find it very difficult to meet the requirements to enter their animals into the feedlot system. However, if there was a **niche market, focused on flavour** rather than tenderness, farmers could sell beef from older, non-feedlot animals. A recent project undertook a comparison between the meat of South African and Australian commercial cattle and South African indigenous cattle to compare flavour and texture. A sensory testing, involving urban and rural consumers from South Africa, took place in August 2009. The results are recorded in ACIAR Technical Report 72, *Beef palatability in the Republic of South Africa: implications for niche-marketing strategies*, which will form the basis of an initiative to start in 2010–11.

Increasing the income of **smallholder wool producers** in RSA's Eastern Cape has been a focus of national and provincial efforts. This has included wool and sheep management and wool classing, resulting in increased incomes. The main constraint to continued growth is pasture quantity and quality. Pastures generally do not support animal production as well as they do in similar conditions elsewhere. A project is introducing legumes adapted to such conditions along with populations of beneficial rhizobial bacteria and improved management strategies. Since 2007 the project has

sown 23 experimental demonstrations in eight communities and on three experimental farms, and conducted training courses on sowing and inoculation of pasture legume seeds. In RSA grazing of the legumes has begun on a 10-ha site at Dudamashe, and experimental data have been accumulated for legume biomass, persistence and nitrogen fixation at Dudamashe and Lushington. After three seasons of observations from legume sowings, it is evident that several annual and perennial legumes are well adapted to both the edaphic conditions and the grazing management.

Food Security through Rural Development initiative

ACIAR is assisting with delivering key elements of the Australian Government's enhanced engagement with Africa through the Overseas Development Assistance – Food Security through Rural Development initiative. During 2009–10 ACIAR commenced a major program to progress the sustainable intensification of **maize–legume cropping systems** for food security in eastern and southern Africa (SIMLESA). This is a $20 million investment to provide agricultural productivity improvements in Ethiopia, Kenya, Malawi, Mozambique, South Africa and Tanzania. It builds substantially on completed ACIAR projects in Kenya, Malawi, Zimbabwe and Mozambique, and focuses on maize as the main staple and legumes as an important dietary protein source for the rural poor. Combined rainfed maize–legume cropping systems show considerable promise in boosting productivity and helping reverse the decline in soil fertility that is a fundamental cause of low smallholder productivity in the region.

ACIAR's SIMLESA program on maize–legume-based farming systems aligns with African subregional research priorities and forms the basis for partnership with African governments to improve food security. It started with a joint needs analysis, and has led to establishment of broader collaborations in Africa to foster development spillovers of germplasm, seed system innovation and improved crop systems management practices. Through outcomes such as promotion of germplasm and crop management by extension agencies, NGOs and agribusinesses in an environment of improved availability of seed, knowledge, credit and markets, the program aims to lift production of maize by 30% in the target regions of the partner countries and reduce yield variability by a similar extent.

The International Maize and Wheat Improvement Center (CIMMYT) will manage the program in close collaboration with the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and the partner countries, along with the International Center for Research in the Semi-Arid Tropics (ICRISAT) and Australian partners. Partnerships formed with a range of NGO and private and public sector mechanisms will support rapid scaling out of improved maize and legume seed and better crop management approaches. They will be supported by on-farm trials, demonstrations and local innovation systems managed by farmers, researchers, extension agencies, NGOs, and local fertiliser and seed input and marketing agents.

The SIMLESA program will also extend the capacity of African researchers through involvement in short-term and postgraduate training in program areas at partner universities, co-supervised by leading international researchers. It builds on existing programs of ASARECA and African partner countries, on CGIAR research and NGO projects, and on the results of earlier ACIAR-supported projects on crop modelling and best-bet crop technologies in southern Africa.

MULTILATERAL PROGRAM

Position

The system of International Agricultural Research Centres (IARCs) comprises the institutions financed under the umbrella of the Consultative Group on International Agricultural Research (CGIAR), together with non-associated centres that also have a global mandate. Under section 5 of its legislation, one of ACIAR's functions is 'to fund International Agricultural Research Centres'.

The IARCs have considerable research capability and a good track record of delivery of benefits, particularly in crop improvement and diversification, where they have achieved very high returns on investment. During 2008 the CGIAR commenced a fundamental review of its operations, followed during 2009 with finalisation of the operational details of the reform agenda, with implementation starting from early 2010 but expected to take between 1 and 2 years to be completed.

As part of its Food Security through Rural Development Statement tabled in May 2009, the Australian Government has decided to significantly increase its budgetary support to a reformed CGIAR from 2009–10. This increased support will not only enhance Australia's international research commitments, but will also provide opportunities to build stronger links and broader engagement with individual centres in ACIAR's own development work. The CGIAR reforms will ensure that the strategy and programs will operate in the context of the international agricultural research-for-development architecture as agreed by donors and developing country stakeholders. The arrangements will enable the Consortium of Centres to speak with a combined voice and provide leadership in the international arena.

Achievements

The contribution of the IARCs to ACIAR projects is documented throughout the country reports. In countries such as Burma and Iraq designated IARCs undertake ACIAR-commissioned research that breaks down otherwise insurmountable barriers to reach the poor farmers of those countries. In Burma ICRISAT has taken a leadership role in the conduct of the project on increasing food security and farmer livelihoods through enhanced legume cultivation in the country's central dry zone. Scientists from ICRISAT have formed strong relationships with researchers from the government and university sectors in Burma, as well as with farm managers from different townships. They have encouraged participation in project trials, reviews and planning. Two Burmese peanut researchers have also attended a 3-month training course at ICRISAT in peanut breeding.

For research in Iraq ICARDA has been instrumental in establishing a base for the project at its headquarters in Syria. This has enabled many of the meetings of project scientists from many countries to be located at a site in reasonable proximity to where the research is taking place in Iraq, to undertake trials for technology refinement/verification and to conduct Iraqi scientist and farmer training in a familiar environment.

ICARDA arranged two significant visits to sites in Syria during 2009–10. One involved 18 Iraqi and 14 Syrian farmers, and the other 16 Iraqi and 8 Syrian extension officers. They inspected and discussed zero-tillage (ZT) research, farmer experiences with ZT and ZT seeder fabrication across northern Syria. These visits greatly enhanced knowledge of ZT and effective ways to undertake participatory research, development and engineering through demonstrations and field days.

CIMMYT has taken a similar lead in working with wheat in Afghanistan, although in this instance the research focus is within the country. The project is progressing steadily to identify suitable varieties by conducting yield trials, to develop or adapt appropriate wheat and maize production technologies, increase research capacity building, and undertake base seed multiplication of experimental and released varieties resistant to the Ug99 strain of wheat rust.

As reported in the section on southern Africa, CIMMYT is also the commissioned organisation taking the lead in Australia's food security initiative for Africa. The Centre is managing the project in collaboration with ASARECA, partner country research entities, other CGIAR centres and Australian partners. The project focuses on maize as the main staple and legumes as an important dietary protein source for the rural poor. Through participatory research and development with farmers, extension agencies, NGOs and agribusinesses along the value chains, the program aims to improve maize and legume productivity by 30% and reduce the expected downside yield risk by 30% on approximately 500,000 farms within 10 years.

IRRI and CIMMYT are joint managers of a project to advance the sustainable intensification of rice–maize production systems in Bangladesh, where the rise in demand for maize—both as human food and from the poultry and fish industries—has led to a trend away from traditional rice–rice and rice–wheat cropping systems and toward rice–maize systems. The IRRI–CIMMYT project involves multiple partnerships for research and technology transfer in four districts in Bangladesh. It also has formal links with the joint IRRI–CIMMYT – International Food Policy Research Institute (IFPRI) – ILRI Cereal Systems Initiative for South Asia project.

The Lao PDR Government has given highest priority in its rural development strategy to improving livestock production systems, given the potential of livestock production to alleviate poverty and reduce shifting cultivation. Rearing pigs is a widespread smallholder livelihood activity in the northern mountainous regions of Laos but productivity is low due to poor nutrition. **CIAT** is leading a project to introduce forage legumes into the farming system as a way of improving pig nutrition, while reducing the time spent by women in gathering and preparing feed. In the initial phase of the research it is scaling up a promising forage, to introduce it to at least 1,000 farmers and learn how they adapt and integrate the feed into their farming systems. It is also introducing and evaluating new forages for their suitability as pig feeds.

Stocks of sea cucumbers have been chronically over-exploited throughout the Asia–Pacific region. ACIAR and the **WorldFish Center** have invested considerably in successful research to culture sea cucumbers. The ACIAR-funded studies of the 'sandfish'—a high-value sea cucumber easily harvested from inshore habitats—have led to technologies for producing them in hatcheries and releasing them in the wild. A current project is testing a new livelihood option in the Philippines and Australia. It involves releasing cultured sandfish in managed inshore habitats and then allowing communities to harvest them at market size after 3 years, and also replenishing selected sandfish populations in the Philippines through restocking into marine reserves for the purpose of building up a critical mass of spawning adults. Some 65,000 hatchery-produced sandfish have now been released in cooperation with local community groups across four sites in the Philippines. Monitoring has continued, showing variable growth and survival rates and shedding new light on the viability of different models of sea-ranching.

Jepara in Java has a long tradition of high-quality furniture making, coupled with ready access to high-quality teak timber. With the adoption of environmentally and socially sound practices, Jepara could be a strong competitor in international markets. But inefficiencies throughout the value chain currently result in plantation over-harvesting, leading to poor incentives for producers and misuse of resources. The **Centre for International Forestry Research (CIFOR)** is leading a project designed to improve the value chain for mahogany and teak furniture enterprises in Jepara. It is enhancing the structure and function of the furniture industry to benefit small-scale furniture producers, helping them and their organisations to make improvements to marketing. The project is working in close coordination with another Indonesian-based ACIAR–CIFOR project that focuses on improving the livelihoods of teak growers. It is helping smallholders to develop alternative sources of income as they wait until trees mature, improving their knowledge of silvicultural techniques and helping them to gain market access.

Impacts flow on to global networks

ACIAR administers, on behalf of the Australian Government, investment in International Agricultural Research Centres (IARCs). These centres are non-profit institutions that conduct research to benefit developing-country agriculture to reduce poverty.

The majority of centres operate under the umbrella of the Consultative Group on International Agricultural Research (CGIAR), along with non-associated centres that also have a global mandate. ACIAR provides both core and non-core funding and there is an intention to increase the core or unrestricted funding in future years. Some funds will also be provided to work with selected IARCs on a project modality to address issues constraining agriculture in developing countries in the Asia–Pacific region and beyond.

One project, conducted by the International Potato Center (CIP) and ACIAR on sweetpotato in Solomon Islands and Papua New Guinea (PNG), demonstrates the linkages upon which the IARCs can draw and contribute back to. Past research in East Africa, Cuba, the Philippines, China and beyond is delivering benefits to project participants in PNG and Solomon Islands. CIP project scientists based in Indonesia are helping in this process.

Flow-on benefits also accrue to other CIP research. In Solomon Islands linkages created by the CIP–ACIAR research extend beyond the scope of the project. Training in the use of virus detection techniques using NCM-ELISA kits distributed by CIP has been undertaken with Solomon Island scientists. CIP is also supplying orange-fleshed sweetpotato varieties with high dry-matter content, which have significant dietary benefits, to the Secretariat of the Pacific Community in Suva, Fiji, to disseminate elsewhere in the Pacific.

The training modality—farmer field schools—used in the CIP–ACIAR project was based on past CIP research. Through the project, lessons emerging from this participatory approach are being incorporated for use in other CIP projects in several Asian countries.

CIP is one of a number of IARCs that ACIAR partners with. A recent independent economic assessment of the impacts of CGIAR research in ACIAR's mandated regions demonstrates the value of ACIAR–IARC projects.

Using impact assessments of past CGIAR research, a short list of projects accruing benefits was selected. It focused on those projects with proven, reliable and credible economic impacts, identified through a framework that rated transparency of benefits and demonstration of causality.

This produced two sets of assumptions—a restricted set focused on credible benefits and a relaxed set incorporating credible, plausible and potential benefits. The restricted set reveals that, for every $1 million invested by the CGIAR system in ACIAR's mandated regions, a return to the developing countries in those regions is at least $2.7 million. For the relaxed set of assumptions, the return is a higher $3.9 million for each $1 million invested.

The value of investment in the CGIAR system also includes returns accruing to Australia.

The importance of spillover benefits has major implications for the distribution of research benefits between countries, as well as between producers and consumers. Investment in the IARCs allows ACIAR to increase the flow of spillover benefits to the agriculture-dependent poor.

BUILDING RESEARCH CAPACITY

Position

One of ACIAR's key priorities is to build capacity in agricultural research institutes of partner countries by providing discipline-specific and broader training opportunities. With co-funding from AusAID since 2006, ACIAR has significantly increased the number of its postgraduate awards (known as the John Allwright Fellowships). The training program focuses on specialised training activities provided through postgraduate and research management fellowships and a small number of short courses that target specific cross-program issues.

The priority of the training program is to enhance the research capacity of partner-country institutions through targeting individuals who are involved in ACIAR projects. Much of this is done in individual projects managed by individual research programs through on-the-job training, where either developing-country scientists visit Australia or Australian specialists visit partner countries to present a training program on a specific technical subject.

ACIAR training activities include the following, with the first representing the main expenditure:

- postgraduate training, which comprises mainly John Allwright Fellowships for postgraduate study in Australia; a smaller number of awards support in-country postgraduate diploma and Masters degree training associated with ACIAR projects in Papua New Guinea (PNG) (at University of Technology, Lae) and the Pacific island countries (at University of the South Pacific, Suva and Apia)
- support for small in-country research projects for fellowship returnees
- research management training (John Dillon Memorial Fellowships)
- short-term 'cross-program' training courses.

For training activities in Indonesia the training program works closely with institutional development advisors based in Bogor, who form part of the ACIAR-managed component of the Smallholder Agribusiness Development Initiative (SADI). In 2009–10 several training programs involved participants from ACIAR–SADI and other ACIAR programs.

Postgraduate fellowships

John Allwright Fellowships are awarded to partner-country scientists involved in ACIAR-supported collaborative research projects, enabling them to undertake postgraduate training at Australian universities at the Masters or Doctoral level. Studies focus on areas that add value to the theme of the ACIAR project in which the awardee is engaged but do not directly form part of the project. If appropriate, fellows are able to spend up to 50% of their research project period on fieldwork in their home country. This enables the fellows to ensure that their postgraduate research work is relevant to the project and their home country's needs, and allows them to maintain their professional and personal networks. With increased recognition by the Australian aid program of the capacity-building benefits provided to partner countries and the impact on regional relationships through support of postgraduate training in Australia, the size of the fellowship scheme has increased significantly over recent years. From a base of only 15 scholars in 1999–2000, there were 145 active fellowships at Australian universities during 2009–10.

A total of $6.0 million was expended on the John Allwright Fellowship Scheme (including co-investment from AusAID) during 2009–10. Thirty-one fellows successfully completed their studies and 18 new fellows (from Bangladesh, Cambodia, East Timor, Indonesia, Pakistan, PNG, the Philippines, Solomon Islands and Vietnam) commenced at 12 universities in Australia. All new fellows attend a 5-day meeting in Canberra, where they learn more about ACIAR and also undertake training in science communication and writing research papers, and have the opportunity to meet and network together. In 2009, 28 fellows participated.

Following approaches from PNG and Pacific island countries, support has been provided for a limited number of in-country postgraduate diploma and Masters degree awards linked to ACIAR projects. This scheme aims to provide a larger body of trained agricultural, forestry and fisheries researchers for these countries in an environment where taking a larger cohort of researchers out of the system for several years would potentially damage the capacity of these (smaller) national agricultural research systems. It builds linkages between government and universities in the region and helps develop the research capacity of the universities. The scheme commenced in 2005 at the University of Technology, Lae, PNG, and was followed in 2008 by the University of the South Pacific – ACIAR Postgraduate Scholarships Program.

Returnee small project awards

Small grants of up to $10,000 are available for successful John Allwright Fellows when they have completed postgraduate studies and returned to relevant employment in their home country. The follow-on funding scheme provides for an activity that 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 2009–10 five small projects, totalling $49,520, were awarded.

Other postgraduate studies in conjunction with ACIAR projects

Additional to the John Allwright Fellowship scheme, a significant number of Australian and overseas students undertake postgraduate research theses in close conjunction with active ACIAR projects. For example, they may receive funding from an Australian postgraduate award or an AusAID scholarship but work on a topic that is linked closely to the ACIAR project area, and potentially receive some travel or operating support from the ACIAR project. These students are important in expanding the footprint of the ACIAR project and ACIAR's scientific impact. Every 3 years ACIAR conducts a survey through its project leaders and documents details of these students and their projects. The most recent survey was completed in September 2009. There were 227 students undertaking postgraduate studies in conjunction with ACIAR projects and they fell into three categories:

- Australian students studying in Australia for an Australian higher degree. Of the 42 students in this category, 23 (14 males and 9 females) completed their degrees in the 2006–09 period, with 17 PhDs and 6 Masters degrees. Many of the students worked either full- or part-time as research assistants on the ACIAR project while doing postgraduate degree research. Some of these students focused only on the Australian side of the ACIAR project, while others travelled overseas for fieldwork in the ACIAR partner country.
- International students studying in Australia for an Australian higher degree. Many of these students were funded through AusAID, but a significant number also received scholarships from an Australian university or their own government. There were only 12 who completed studies in the 2006–09 period (7 males and 5 females, 5 PhDs and 7 Masters), a significant decrease from the previous survey. However, 27 students are currently studying (20 males and 7 females, 18 PhDs and 9 Masters). The students are predominantly from ACIAR's two biggest partner countries—PNG and Indonesia.
- Overseas students studying internationally (overwhelmingly, but not exclusively in their home countries) formed the largest group, with 91 students completing studies in 2006–09 and 56 currently studying. ACIAR projects provide attractive opportunities for these students through access to operating and salary funds and the opportunity to develop international research linkages. The drop in numbers between those students who are currently studying compared with those who completed their studies reflects the fact that many of the completed students were from China, and the shrinking ACIAR China program no longer offers the same numbers of opportunities. Both the ongoing and concluded student groups represented a spread of countries, but the ongoing students were mainly from Indonesia, with several Cambodian, Indian, Pakistani, South African and Thai students on the list. Of the completed students, 47 were male and 44 female, with 32 PhDs awarded and the rest Masters degrees. Of the ongoing students, 37 were male and 27 students were completing PhDs.

John Dillon Memorial Fellowships

John Dillon Fellowships provide a career development opportunity in Australia for outstanding mid-career agricultural scientists and economists from ACIAR partner countries. The aim is to develop the leadership skills of fellows in agricultural research management, agricultural policy and/or extension technologies through exposure to Australian agriculture across a range of best practice organisations involved in either research, extension or policymaking. ACIAR has awarded 54 fellowships since the program's inception in 2002. A group of 9 fellows (from Indonesia, Lao PDR, PNG, the Philippines, Vanuatu and Vietnam) visited Australia for a 5-week period in March–April 2010. A highlight of the visit was the presentation of plaques by Bob McMullan, Parliamentary Secretary for International Development Assistance, at Parliament House. Generous cooperation was received from all host organisations and the fellows also appreciated the opportunity provided for networking.

John Allwright and John Dillon Alumni Association

ACIAR has an Alumni Association that maintains linkages with all former students who received support through the John Allwright Fellowship program and John Dillon Fellowships. Alumni are kept involved with ACIAR in several ways. Several former fellows now lead or play key roles in ACIAR projects and partner organisations. Others have assisted in the delivery of ACIAR-sponsored training courses and impact assessment activities in partner countries. All receive copies of ACIAR technical publications and newsletters.

Australian Youth Ambassadors for Development

Since 2000 ACIAR has provided successful assignments for over 50 Youth Ambassadors in the AusAID-funded Australian Youth Ambassadors for Development scheme. The scheme gives young Australians the opportunity to spend 3–12 months assisting on a development activity in a partner country. During 2009–10 nine Youth Ambassadors were associated with ACIAR projects in the following countries: Cambodia, China, Indonesia, Samoa, Vanuatu and Vietnam.

ATSE Crawford Fund fellowships, training courses and master classes

In 2009–10 total funding to the Australian Academy of Technological Sciences and Engineering (ATSE) Crawford Fund included provision of an allocation from the Australian Government (through ACIAR) of $750,000, as well as $101,077 from ACIAR for joint training activities. The fund also attracted contributions from state governments and the private sector. In 2009–10 the Crawford Fund conducted several short-term training activities associated with ACIAR projects, including a master class held in Turkey on 'Soil-borne pathogens of cereals'. Topics for other training courses associated with ACIAR projects included:

- large ruminant reproduction (workshop held in Lao PDR)
- improving competencies in potato/sweetpotato micropropagation, virus diagnostics and virus elimination in PNG.

The Crawford Fund also supported short technical training placements for developing-country scientists in Australia. In 2009–10, eight placements were sponsored for members of ACIAR project teams.

Cross-program training

Short-term training activities in partner countries for staff associated with active ACIAR projects are also available. In 2009–10 the courses were predominantly provided to Indonesian researchers and extensionists working on ACIAR projects under SADI:

- Training in agribusiness and value-chain approach (Mataram, June 2009)

  This was a joint ACIAR–SADI Farmer Empowerment Through Agricultural Technology and Information Project training course for 16 women and 16 men from 20 Assessment Institutes for Agricultural Technology (BPTPs) throughout Indonesia and the coordinating body, the Indonesian Centre for Agricultural Technology Assessment and Development. There were participants from all four ACIAR–SADI BPTPs. The course was held in Mataram and facilitated by course providers from the University of Adelaide and BPTP East Java. The overall goal of the training was to develop capacity in the value-chain approach for BPTP researchers and extensionists.

- Follow-up to linkages visits by the Indonesian Vegetables Research Institute (Mataram, August 2009)

  The overall objective of this training was to follow up on some key issues resulting from the first linkages visit to the Indonesian Vegetables Research Institute, held in March 2009. Specifically, the objectives of the training were to:

  - deliver a range of presentations on cultivation technologies for oyster and straw mushrooms
  - deliver focused practical training on cultivating spawn and substrate
  - facilitate discussion and feedback regarding key issues in cultivation technology and postharvest handling of edible mushroom products
  - interact and share lessons with team members from the ACIAR–SADI Competitive Collaborative Research Grant project in Sultra
  - develop a network among key stakeholders to assist with future development of the mushroom industry in eastern Indonesia.

  There were 30 participants (15 women and 15 men), from research and development organisations in West Nusa Tenggara (WNT) and Sultra as well as representatives of farmer groups from WNT. The training was held at BPTP WNT and delivered by three senior trainers from the Indonesian Vegetables Research Institute in Lembang, Bandung and West Java.

COMMUNICATING RESEARCH

Position

ACIAR's enabling legislation commits the Centre to communicating the results of the research it funds, and responsibility for this is held by Communications and Public Affairs. 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.

Project findings are disseminated through the scientific publishing series. The range of publications includes 'how-to' manuals, workshop proceedings, extension publications, technical reports, monographs and a suite of corporate publications. ACIAR's website is the primary source of information on project activities and outcomes, and offers all publications available for free download. Hard copies and CD-ROMs of publications can be purchased through the online bookshop. Translation 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, and television and radio coverage; targeting specific audiences for communicating research outcomes; and providing materials at major scientific conferences and events.

Achievements

In 2009–10 ACIAR published and distributed 15 scientific and extension titles in its scientific series and five reports in its impact assessment series (IAS). Fifty project final reports were published online in PDF format, including 11 translations of previously published final reports, with in-demand available titles being printed in small numbers on request. All publications are listed in Appendix 4, together with the corporate and research awareness titles produced during the year.

A total of 18,533 hard copies of publications were distributed, of which 3,619 were sold to developed-world customers. Total revenue from sales and copyright payments was $20,320. Complimentary copies are distributed on request to people and institutions involved in agricultural research, development and extension in ACIAR's partner countries, as well as being available for free download from the ACIAR website. An average of around 82,000 PDF versions of ACIAR scientific and corporate publications were viewed each month.

Forages and farmers: case studies from South-East Asia (ACIAR Monograph No. 142, co-published with CIAT) represents the fourth book in a series of ACIAR monographs on forages. Previous books in the series covered forage varieties; how to grow, manage and use them; and simple action-research approaches needed to integrate forages on smallholder farms. This latest book in the series documents, through case studies, the nature and scale of livelihood impacts that can emerge from the combination of robust forage varieties, sound management practices and research approaches that encourage farmer innovation.

The first two of a series of publications on sustainable upland cropping systems in Cambodia were published. The first is a manual on maize production, outlining important agronomic methods and technology that farmers may adopt to grow maize in Cambodia. It was published in English online (Monograph No. 140) and then translated into Khmer, with hard copies printed and distributed in Cambodia (Monograph No. 140a). This publication model will apply to the whole series. The second in the series was a weed identification guide for farmers and extension workers (Monograph No. 141), which is currently being translated into Khmer.

Corporate publications included *Adoption of ACIAR project outputs: studies of projects completed in 2005–06*, which examined extension and adoption of research outcomes from the projects that ended 4 years earlier. *Partners in Research for Development*, the flagship ACIAR magazine, reported on a range of projects across the themes of water management, food security, and the linkages between policy and the implementation of agricultural research outcomes in the developing world.

Country profiles, detailing ACIAR project activities in 19 partner countries, were produced for online viewing. These documents each provide a current overview of ACIAR's programs in a particular partner country or region with summaries of active and recently concluded projects.

The ACIAR Communications team worked collaboratively with the Crawford Fund on a range of activities to generate public awareness of the Centre's activities and on the benefits of international agricultural research. Media releases were issued by the former Foreign Affairs Minister, Stephen Smith; the Parliamentary Secretary for International Development Assistance, Bob McMullan; and by Australian diplomatic posts in Indonesia, Vietnam and Vanuatu. The Crawford Fund sponsored journalist trips to Cambodia, Solomon Islands, Taiwan, East Timor, the Philippines and Kenya. These initiatives, along with other proactive strategies, resulted in increased media coverage of ACIAR's activities in mainstream, specialist science and rural media within Australia; internationally on Radio Australia and Australia TV Network; and in the media of partner countries.

Some of the highlights of media coverage of ACIAR activities in 2009–10 include ABC 'Landline' programs on the ACIAR–AusAID-funded Seeds of Life project in East Timor, the *Issues* magazine edition on food security, widespread media coverage of the ACIAR–AusAID-funded conservation cropping project in Iraq during a visit by project leader Dr Colin Piggin, another ABC Radio series on Australians involved in international agricultural projects, and Pacific coverage of the announcement of the new Pacific Agribusiness Research for Development Initiative. In addition, ABC Rural reporter Sarina Locke won the radio category of the International Federation of Agricultural Journalists Star Prize for Agricultural Broadcasting—for her documentary on the development of agriculture in West Timor, Indonesia, completed when she travelled to Indonesia with the assistance of the Crawford Fund.

ACIAR's profile was also raised through sponsorship of high-profile events, speaking opportunities and attendance at a range of events in Australia and key partner countries. The Centre continued with its strong support and involvement in the key national event on agricultural development—the Crawford Fund Conference—this year themed 'World food security: can private sector R&D feed the world'. ACIAR CEO Dr Nick Austin spoke on 'The science of food security' at the ABARE Outlook Conference and the Australian Institute of Agricultural Science and Technology Conference.

ACIAR has also engaged in the public narrative and debate around food security and sought increased public awareness of its role and work through submissions to, appearances before, and/or provision of information to a range of committees, inquiries and organisations, including the House of Representatives Standing Committee on Industry, Science and Innovation's inquiry into Australia's international research collaboration; the Joint Standing Committee on Foreign Affairs and Trade inquiry into Australia's relationship with the countries of Africa; and the Productivity Commission Inquiry into the Australian Government Research and Development Corporations Model.

The Crawford Fund proactively sought speaking opportunities for a wide range of visitors from IARCs and organisations such as CIMMYT, the World Agroforestry Centre, CAB International, IWMI, the Bill and Melinda Gates Foundation and the World Bank. Other relevant communications activities include participation in the new Aid Communicators' Network and the Australian Science Communicators conference, where the Crawford Fund arranged a session on communicating agricultural research to farmers.

ACIAR's website

ACIAR's website provides comprehensive information about the Centre's planning, research programs and priorities in partner countries, as well as detailed project information and outcomes. The ACIAR website continues to play an important role in the Centre's communication strategy. Statistics show that traffic to the website increased significantly in 2009–10, recording 526,378 unique visits and 22,757,571 hits (in the 2008–09 year it recorded 210,200 unique visits and 14,294,195 unique visitors), making it an important source of information for stakeholders and those seeking to engage with the organisation.

A project aimed at redeveloping the website to build on its strengths and better address the needs of stakeholders commenced in early 2010. As part of this project, an online survey was conducted that showed that users of the website were very happy with the information on the site but thought that improvements in navigation and design could be made. These findings, together with ACIAR's need to continue to effectively communicate its strategic direction and place in the world, are major drivers for the website redesign.

Photo: Stuart Hay

Then Foreign Minister Stephen Smith opens the 2009 Crawford Fund conference – Can private sector R&D feed the world? – at Parliament House, Canberra, on 27 October 2009.

MEASURING RESEARCH IMPACTS

Position

ACIAR has, from its beginning, placed significant emphasis on assessing the impact of the research it funds, particularly focusing on quantifying the returns to research investments. It has used these assessments to account to stakeholders and to support improved decision-making and management of its funds. ACIAR has not only applied the extensive body of existing literature to this area of investment analysis but has also contributed to this literature through this process.

The Impact Assessment program currently commissions two types of finished project assessments. The first are primarily economic evaluations, which are published in ACIAR's impact assessment series (IAS). Most of the assessments are undertaken by independent economists with special expertise in measuring the impact of agricultural research. They involve an in-depth analysis of the adoption and impact of project outputs in the partner countries and Australia, and provide estimates of the returns to investment in the research area of interest. A qualitative assessment of social and environmental impacts is also sought. In recent years ACIAR has, in addition, commissioned evaluations to quantify the benefits from investment in capacity building.

The contextual environment in which ACIAR operates is complex—success is dependent on the institutional, cultural, biophysical and political environment in which it operates. Recognising these complexities, the second type of finished project assessments are the set of adoption studies, which are primarily undertaken to provide ACIAR and its project leaders with a greater understanding of the pathways to change. They are undertaken by the Australian project leader 3–4 years after completion of the project, and provide ACIAR with information on the difference the project has made at both scientific and community levels in the partner countries and Australia. If uptake of the project results has not occurred, the reasons why are sought. An increase in understanding of the contextual environment in which we operate increases the likelihood that our research will have a positive impact.

Within the Impact Assessment program, emphasis is also placed on developing collaborative networks with Australian and partner-country practitioners responsible for research evaluation, and building capabilities to undertake robust evaluations. These activities help improve the accuracy of the information used in assessing the impacts of the research and the effectiveness of the methodology used to quantify the returns on investment.

Achievements

In 2009–10 five impact assessments were finalised and reports published. Two more have been completed and are due to be published in early 2010–11. The focus on undertaking thematic impact assessments, rather than assessing the impact of individual projects, continued, with assessment of ACIAR's investment in research on forestry and forages in Indonesia and forestry in PNG. In addition, an analysis of studies reporting the returns to investment in the CGIAR, focusing on ACIAR's mandate regions, was completed and published.

This is the seventh year in which adoption studies were undertaken. The adoption study portfolio now contains 65 sets of projects from which we are able to learn important lessons that are fed back into our project development, design and implementation process. Reports in ACIAR's adoption studies series also provide an estimate of adoption characteristics for the projects covered. The qualitative assessment suggests that, in the majority of cases, the project outputs are being used by either intermediaries or the final targeted groups. While the measure of adoption provided in the studies is relatively subjective, seven projects reporting a high level of uptake have been subjected to a more in-depth quantitative analysis. With one exception, each was found to have significant benefits.

The experience gained through all these activities has been used to provide two broad types of training workshops. The first type, held in Quy Nhon in Vietnam in 2009–10, focused on within-project evaluation aimed at providing researchers involved in ACIAR projects with the skills required to ensure that projects are designed and managed in a way that recognises the complex pathways to change. The aim of the second type of training workshop was to provide agricultural economists with the framework and skills necessary to undertake detailed quantitative impact assessments. This training workshop was co-facilitated with IRRI and held at IRRI headquarters in the Philippines.

In addition, ACIAR in general, and the Impact Assessment program in particular, provided considerable input into the strategic review of Australia's rural development assistance conducted by the AusAID's Office of Develoment Effectiveness. The aim of the review is to guide actions that will strengthen the impact of Australia's official development assistance in rural areas.

Impact assessments

Reform of domestic grain markets in China: a reassessment of the contribution of ACIAR-funded economic policy research

An ex-ante assessment of the impact of two ACIAR-funded economics research projects dealing with domestic grain market reform in China was undertaken in 2004 and published as an IAS report. ACIAR investment and in-kind contributions from partners for both projects totalled almost $2.6 million (in 2002 dollar terms). At the time of the original impact assessment, policy reviews and empirical measures of assistance to the grains industries suggested that the late 1990s were a period of policy retrenchment rather than reform and, hence, that the welfare gains from this research program were prospective in nature rather than realised.

Subsequently, estimates of nominal rates of assistance to agriculture in China were substantially revised: the actual experience in the markets was one of continuing reform rather than policy retrenchment. In light of this, the focus of this impact assessment was to recalculate the return to investment in economics research into grain market reform in China in general and to the ACIAR projects in particular. The chief attraction is that the new analysis is ex post rather than ex ante, and is consistent with recent views about the nature and extent of reform in the marketing of grains in China.

These revised estimates are higher than the original estimates, as might be expected given the faster rate of reform. The benefit:cost ratio for ACIAR's investment is in the order of 20–30:1. However, the original discussion of other measures of success of the projects still stands. The projects were highly likely to have been successful because of authority in the commitment of the Chinese collaborators, the capacity building within Chinese institutions, and the strong publications record and ongoing funding of the projects.

ACIAR investment in research on forages in Indonesia

Six related ACIAR Indonesian forage research projects focused on increasing the adoption of productivity-improving technologies and thus the incomes and livelihoods of crop–livestock smallholders in eastern Indonesia. An impact assessment was undertaken to estimate the total returns to this research and to attribute part of these returns to ACIAR.

Expressed in net-present-value terms, the adoption of the forage R&D technologies could return an estimated $1,300 million if there is strong policy support and about $1,000 million in the absence of such support. Virtually all (93%) of the gain would flow to producers since the impact on the consumer price is quite small, reflecting the highly elastic demand for cattle faced by producers. The investment, noting that major adoption has yet to occur, appears to offer a high rate of return. The internal rate of return is estimated at around 20% and the benefit:cost ratio at

greater than 20:1, even allowing for a significant investment in future extension activities of around Rp5,000 million per year after 2011 for 30 years and beyond (as either new extension funding or reprioritising of existing extension service expenditure). This extension investment, in present-value terms, is roughly equal to the total R&D investment to date. If the extension investment is increased to Rp15,000 million per year to achieve a faster rate of adoption, the estimated investment return could be higher, around 22%.

The ACIAR financial contribution to the R&D investment has been calculated at 60%, with the balance through in-kind or other funding of the research and extension agencies—predominantly CSIRO, the University of Queensland, Balai Pengkajian Teknologi Pertanian and the universities in Indonesia.

For delivery of the estimated benefits, future extension work will be critical. Both investments—R&D and extension—are required to deliver the estimated benefits. With the base level of extension (and resulting 50%–50% R&D–extension contribution), ACIAR's share of the benefits would be 30%—around $300 million. As the extra benefits arising from additional extension are attributable to only that additional extension, the value of the benefits attributable to ACIAR under this scenario would remain at $300 million.

Extending low-cost fish farming in Thailand: an ACIAR–World Vision collaborative program

In an attempt to increase adoption of the results of earlier technical research projects, ACIAR invested in a collaborative program of extension-based projects with World Vision (WV). The program comprised six projects located in Thailand, Lao PDR and Vietnam that were a combination of participatory research and extension training. The aim was to use WV field staff engaged in community development projects to direct the research and deliver the extension advice.

Impact assessment of all six components of the ACIAR–WV program was not feasible because there was insufficient information. An alternative approach was to select one project component for an impact assessment as an indication of the value of this type of investment. The Thai fish-farming project was selected for this purpose.

The net present value of the project was $6.9 million for a 5% discount rate. The project had a benefit:cost ratio of 5.1:1. Attribution of the net benefits based on project expenditures indicates a net benefit of $0.9 million for the ACIAR investment.

The biology, socioeconomics and management of the barramundi fishery in Papua New Guinea's Western province

From July 1999 to December 2003 ACIAR provided funding for a project on the biology, socioeconomics and management of the Western province barramundi fishery on the Fly River and adjacent coast of PNG. The primary aim of this project was to draft a barramundi fishery management plan that was acceptable to all stakeholders. The plan was passed into PNG law on 15 April 2003 and was gazetted by the PNG Government the following day. This, in itself, represented a change in practice by PNG policymakers and was a significant achievement of the project.

While the project made a significant contribution to the knowledge required to successfully manage the fishery, the management plan and, therefore, the project do not appear to have delivered any significant benefits to the community. Several other factors seem to be responsible for this outcome—inadequate enforcement, failure to deal with the problem of over-fishing with lures, and a total allowable catch that appears to be too high and not necessarily enforceable. Nevertheless, the project may yet deliver some significant benefits to the community in the future if its scientific outputs are used to underpin revisions to the plan.

Benefit–cost meta-analysis of investment in the International Agricultural Research Centres

The Australian Government has supported IARCs, primarily the CGIAR, since their founding in the early 1970s. Since 1992 this support has largely been channelled through ACIAR. For core funding the priorities are to foster strong linkages between IARCs, ACIAR and Australian research organisations working together in our partner countries, and to contribute to strengthening IARC governance to ensure that programs focus on rural poverty and inclusive growth. The priorities for project-specific funding are to strengthen the links between Australian research institutions, NARS and the IARCs, and to help focus IARC institutions on ACIAR's bilateral priorities.

The key objective of this study was to assess and compile evidence of how effective CGIAR investment in agricultural R&D has been in terms of achieving economic impacts within ACIAR's mandate regions. This analysis required the selection of completed impact assessments providing large-scale and verifiable results. As such, the aggregated benefits from this selection process represent a lower bound of benefits that have been confidently realised. The selection comprises only those studies for which reliable and credible economic impacts have been published and where delineation of the benefits to ACIAR's mandate regions could be made. In addition, it was not possible to disaggregate expenditure by the individual CGIAR centres into investments inside or outside the ACIAR mandate regions. Hence, while this process will not capture all the economic benefits arising from investment in agricultural research in the mandate areas, and is likely to overstate the costs, it provides a degree of confidence that the benefit:cost ratio reported is a reliable base measure.

Implementing this procedure indicates that, under the most restricted set of assumptions about credible benefits, every $1 million invested by the CGIAR system in the ACIAR mandate regions produces a return to the developing countries in these regions of at least $2.7 million. Under a more relaxed set of assumptions about credible, plausible and potential benefits the return is up to $3.9 million.

CORPORATE GOVERNANCE

ACIAR'S GOVERNANCE FRAMEWORK

MINISTER FOR FOREIGN AFFAIRS

PARLIAMENTARY SECRETARIES

PORTFOLIO Secretary/AusAID Director-General

ACIAR Commission functions

- to provide advice to the Minister in relation to the formulation of programs of the kind referred to in the CEO's functions
- to provide advice to the Minister in relation to the funding of things referred to in the CEO's functions
- to provide advice to the Minister on program and funding priorities
- to provide advice to the Minister, on the Minister's request, on any other matter relating to the Act

ACIAR Chief Executive Officer functions

- to formulate programs and policies with respect to agricultural research for either or both of the following:
  (i) identifying agricultural problems of developing countries
  (ii) finding solutions to agricultural problems of developing countries
- 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
- to communicate to persons and institutions the results of such agricultural research
- to establich and fund training schemes related to the research programs
- to conduct and fund development activities related to those research programs
- to fund International Agricultural Research Centres (IARCs)

Policy Advisory Council functions

- to provide advice to the Minister in relation to the agricultural problems of developing countries
- to provide advice to the Minister in relation to the programs and policies with respect to agricultural research for either or both of the following:
  (i) identifying agricultural problems of developing countries
  (ii) finding solutions to agricultural problems of developing countries

CHIEF EXECUTIVE OFFICER

The office and role of the Chief Executive Officer (CEO) are established under sections 4A and 5, respectively, of the *Australian Centre for International Agricultural Research Act 1982* (ACIAR Act). Subject to, and in accordance with, any directions given by the Minister under section 5, the CEO manages the affairs of the Centre and its staff. Specifically, the CEO's functions 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 the research programs referred to above

e) to conduct and fund development activities related to those research programs

f) to fund International Agricultural Research Centres (IARCs).

The CEO 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 CEO to be an officer in the Principal Executive Officer (PEO) structure, at PEO Band C. The Minister is the identified Employing Body for remuneration purposes.

ACIAR's CEO has Head of Agency responsibilities as set out in Part 7 of the *Financial Management and Accountability Act 1997* and Part 9 of the *Public Service Act 1999*. The CEO is not subject to direction by the ACIAR Commission in relation to the performance of functions or exercise of powers under these Acts.

The CEO during the 2009–10 financial year was Dr Nick Austin, who commenced a 5-year term on 31 July 2009. Dr Austin replaced Mr Peter Core as CEO following 7 years in the role.

The CEO is 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 Australian Government.

CEO remuneration

The CEO's remuneration is subject to the relevant determinations of the Remuneration Tribunal. These provisions enable the Minister 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 CEO's remuneration package at 30 June 2010 consisted of:

- base salary of $199,721
- superannuation with an employer contribution of 9% of base salary
- annual performance bonus of up to $41,039 (to a maximum of 15% of total remuneration)
- other negotiable benefits, consisting of car and spouse travel.

ACIAR COMMISSION

Section 7 of the ACIAR Act establishes the Commission for International Agricultural Research to provide strategic advice to the Minister on ACIAR's operations. The functions of the Commission, as set out in section 9 of the ACIAR Act, are:

- to provide advice to the Minister in relation to the formulation of programs of the kind referred to in the CEO's functions
- to provide advice to the Minister in relation to the funding of things referred to in the CEO's functions
- to provide advice to the Minister on program and funding priorities
- to provide advice to the Minister, on the Minister's request, on any other matter relating to the Act.

Commission composition

Under section 8 of the ACIAR Act, the Commission consists of a Chair and six other Commissioners. Details on members of the Commission are provided below.

Commission meetings

The Commission met four times in 2009–10, as follows:

9th meeting	2 September 2009	Canberra
10th meeting	17 November 2009	Canberra
11th meeting	26 February 2010	Canberra
12th meeting	27 May 2010	Canberra

Commission members as at 30 June 2010

Dr Meryl Williams
Chair

Vice Chair Scientific and Technical Advisory Panel of the Global Environment Facility, member Governing Board of the International Crop Research Institute for the Semi-Arid Tropics, Vice Chair Scientific Advisory Committee for the International Seafood Sustainability Foundation, member of the Scientific Steering Committee of the Census of Marine Life. Dr Williams was Director General of WorldFish Center from 1994 to 2004 and is a fellow of the Australian Academy of Technological Sciences and Engineering and an honorary Life Member of the Asian Fisheries Society.

Appointed 26 September 2007 for 3 years.

Meetings attended: 4

The Hon Neil Andrew AO
Commissioner

Chairman of the Crawford Fund and past member of the National Capital Authority. He was a member and Chairman of the Advisory Board of Agriculture, an advisory body to the South Australian Minister of Agriculture. He was awarded a Nuffield Agricultural Scholarship in 1975.

In 1983 he was elected to the Australian Parliament as the Member for Wakefield in the House of Representatives. He held various positions including that of Government Whip and served as Speaker of the House of Representatives from 1998 to 2004. Mr Andrew is a primary producer, growing irrigated horticultural crops (principally citrus) in the SA Riverland.

Appointed 26 September 2007 for 3 years.

Meetings attended: 4

Dr Nick Austin
Commissioner

CEO of ACIAR since 31 July 2009. Previously from the NSW Department of Primary Industries where he was Deputy Director-General and led the Department's Agriculture, Biosecurity and Mine Safety Division. Before that he led the department's Science and Research Division and undertook or managed research projects across several areas including dairy, cotton, grain, livestock and wool.

Appointed 31 July 2009 for 3 years.

Meetings attended: 4

Mr Peter Baxter
Commissioner

Director-General of AusAID. Before moving to AusAID, Mr Baxter headed the Department of Foreign Affairs and Trade's (DFAT's) Consular, Public Diplomacy and Parliamentary Affairs Division. His previous Canberra assignments have included senior management roles heading the Consular and Passports (2000), Corporate Management (2000 –01), Market Development (2001–02) and North Asia (2005–08) Divisions with DFAT.

Appointed 6 May 2010 for 3 years.

Meetings attended: 1

Mr Barry Buffier
Commissioner

Deputy Director-General of Industry and Investment NSW and the former Director-General of the NSW Department of Primary Industries. He has served on the boards of many bodies including the Rural Industries Research and Development Corporation, NSW Rural Assistance Authority, and National Rural Advisory Committee; and as Chairman of the NSW Poultry Meat Industry Committee and a Non-Executive Director of SunRice.

He has previously held senior executive appointments in both the private and public sector as Deputy Director-General, NSW Agriculture and National Manager Agribusiness, Westpac Banking Corporation.

Appointed 26 September 2007 for 3 years.

Meetings attended: 3

Mr David Crombie
Commissioner

President of the National Farmers' Federation. Mr Crombie has more than 30 years commercial and representational experience in agriculture, including as Managing Director of major agricultural development and pastoral companies. He was formerly Chair of Meat and Livestock Australia and Chairman of the Australian Rural Leadership Foundation. He is currently a Director of GRM International and Rosewood (NT Beef) Pty Ltd, and Deputy Chairman of FKP (a listed development company).

Appointed 26 September 2007 for 3 years.

Meetings attended: 4

Dr Joanne Daly
Commissioner

Group Executive, Agribusiness Group, CSIRO. This group comprises: Food Futures Flagship, Preventative Health Flagship, CSIRO Entomology, CSIRO Livestock Industries, CSIRO Plant Industries, Food Science Australia (joint venture) and Agricultural Sustainability Initiative.

Dr Daly joined CSIRO in 1983. She was appointed Chief of CSIRO Entomology in February 2003.

Appointed 29 October 2009 for 3 years.

Meetings attended: 3

Commission performance

During 2009–10 major milestones for the Commission included:

- endorsement of ACIAR's 2010–11 Annual Operational Plan
- strategic advice on adoption pathways—the role of ACIAR
- input into the reform of the Consultative Group on International Agricultural Research (CGIAR)
- strategic advice on development of a climate change initiative
- continuing strategic advice on development and implementation of the Food Security through Rural Development initiative
- Crawford Fund review advice to the Minister
- strategic advice on potential growth opportunities for ACIAR and challenges for the future.

Disclosure of interests

Commissioners are required to disclose to the Minister and the Commission any direct or indirect pecuniary interest that may conflict with the proper performance of the Commissioners' functions. A Commissioner who has an interest in a matter being considered by the Commission must not be present during any deliberation by the Commission on the matter and must not take part in any decision of the Commission with respect to the matter. The disclosure and the nature of the interest are recorded in the Commission meeting minutes, which are available for consideration by the Centre's auditors.

Ministerial directions

The Minister may give written directions to the CEO regarding the exercising of his powers or the performance of his functions. This includes directions with respect to the commissioning of particular research. In 2009–10 there were no directions given.

Commission costs

The direct cost of Commission operations during 2009–10 was $52,941 including fees, travel and other meeting expenses. The CEO's salary and other management costs are not included. The comparative figure for 2008–09 for the Commission was $65,933.

Fees for the Chair and Members of the Commission are set by the Remuneration Tribunal. The daily fees for the Chair and Members (other than the CEO) were $721 and $525, respectively, as at 30 June 2010.

POLICY ADVISORY COUNCIL

The Policy Advisory Council, established under section 17 of the ACIAR Act, provides advice to the Minister for Foreign Affairs on strategic aspects of national and regional development. The Council's functions are to provide advice to the Minister regarding:

- agricultural problems of developing countries
- programs and policies with respect to agricultural research for either or both of the following purposes:
  - identifying agricultural problems of developing countries
  - finding solutions to agricultural problems of developing countries.

The role of the Council is to use stakeholder knowledge from partner countries to provide a valuable overview for advising the Minister, the Commission 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.

Photo: Stuart Hay

Policy Advisory Council
Back row (left to right): Mr Peter Forau (Fiji), Mr Brown Bai (Papua New Guinea), Dr Mangala Rai (India), Prof. Ruth Oniang'o, Attended as observer (Kenya), Mr Ian Kershaw (Australia–AusAID), Mr Jia Jingdun (China)

Front row (left to right): Dr Monthathip Chanphengxay (Lao PDR), Dr Leah Buendia, Attended on behalf of Philippines (Philippines), Dr Men Sarom (Cambodia), Prof. Beth Woods (Australia–President), Bob McMullan MP (then Parliamentary Secretary for International Development Assistance), Dr Muhammad Tusneem (Pakistan), Dr Nguyen Van Bo (Vietnam).

Council composition

Membership of the Council is limited to 13, comprising a President, the Director-General of AusAID or his nominee, and not fewer than 9 nor more than 11 other members appointed by the Minister for Foreign Affairs. Members are appointed predominantly from stakeholder organisations in partner countries to bring a range of agricultural and development experience to the Council. 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, having regard for the knowledge of appointees concerning the agricultural problems of developing countries or their experience in organising or conducting agricultural research.

Council meeting

The Council holds an annual meeting, in Australia, over several days to discuss areas related to its role and functions. During 2009–10 the Council met in Canberra on 16 November 2009. The program included discussions with the Parliamentary Secretary for International Development Assistance in Canberra, and was followed by field visits and meetings with Australian research providers and stakeholders in Queensland during 18–20 November 2009.

At its meeting the Council gave priority consideration to:

- program priorities for key partner countries as set out in the Centre's 2009–10 Annual Operational Plan
- the reform of the CGIAR
- the impact of rising food prices in the Asia–Pacific region
- ACIAR's climate change initiative
- the changing nature of ACIAR's modalities and partnerships
- a presentation from AusAID on the key developments in the aid program.

Council membership (as at 30 June 2010)*

Member	Term of appointment
Professor Beth Woods OAM Executive Director Innovation and Biosecurity Investment Department of Employment, Economic Development and Innovation Brisbane QUEENSLAND	President 1 October 2007 – 30 September 2010
Mr Ian Kershaw Nominee of the Director-General AusAID Canberra AUSTRALIAN CAPITAL TERRITORY	Ex-officio member
Mr Brown Bai Managing Director Tola Investments Limited Gordons PAPUA NEW GUINEA	Appointed member 7 March 2005 – 6 March 2008 15 May 2008 – 14 May 2011
Dr Monthathip Chanphengxay Director-General National Agriculture and Forestry Research Institute Vientiane LAO PDR	Appointed member 15 May 2008 – 14 May 2011
Dr Patricio Faylon Executive Director Philippine Council for Agriculture, Forestry and Natural Resources Research and Development Los Baños THE PHILIPPINES	Appointed member 10 March 2003 – 9 March 2005 10 March 2005 – 9 March 2008 15 May 2008 – 14 May 2011
Mr Peter Forau Deputy Secretary General (EGS) Pacific Islands Forum Secretariat Suva FIJI	Appointed member 15 May 2008 – 14 May 2011
Dr Gatot Irianto Director-General Indonesian Agency for Agricultural Research and Development Jakarta INDONESIA	Appointed member 18 September 2009 – 17 September 2012
Mr Jia Jingdun Director China Rural Technology Development Center Beijing CHINA	Appointed member 10 March 2003 – 9 March 2006 10 March 2006 – 9 March 2009 18 September 2009 – 17 September 2011
Dr Men Sarom Vice Rector Royal University of Agriculture Phnom Penh CAMBODIA	Appointed member 15 May 2008 – 14 May 2011
Dr Muhammad Tusneem Member (Agriculture) Planning Commission Islamabad PAKISTAN	Appointed member 15 May 2008 – 14 May 2011

* There were three vacancies as at 30 June 2010.

FINANCIAL ACCOUNTABILITY AND COMPLIANCE

ACIAR, as a statutory authority, is subject to the policy guidelines determined by the Australian Government from time to time regarding accountability, reporting, review and general operations. The Centre is accountable through the Minister to 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's authority derives from the ACIAR Act. Financial powers and duties are also drawn from the *Financial Management and Accountability Act 1997* (FMA Act) and subordinate Regulations and Orders, and from the *Public Service Act 1999* in the case of staffing.

The Centre follows accounting practices in accordance with the FMA Act, other related legislation and recognised accounting standards. ACIAR's financial statements are presented in accrual accounting format on pages 89–141 of this report. The financial statements have been audited by the Australian National Audit Office.

Insurances

Primary corporate insurance for the Centre is provided through Comcover as the manager of the Commonwealth's insurable risks. Comcover's coverage includes general and products liability, professional indemnity, CEO's and officers' liability, property loss and damage, personal accident indemnity and official overseas travel. The cost of insurance for 2009–10 was $46,722 (excluding GST). The premium paid in 2008–09 was $47,835.

Liability and professional indemnity insurances were not invoked in 2009–10.

Risk management plan

Audit Committee

ACIAR's Audit Committee is established in accordance with section 46 of the FMA Act, to promote and facilitate communication between the Centre's auditors (both internal and external) and management. The committee's objectives are:

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

Four Audit Committee meetings were held in 2009–10. Audit Committee membership and attendance during the year were as follows:

Member		Meetings attended
Ms Glenys Roper	Chair, External Member	3
Dr Simon Hearn	ACIAR, Principal Adviser, Strategy and Policy (appointed 28 April 2005)	4
Ms Lisa Wright	ACIAR, Director, Corporate Programs (appointed 11 December 2008)	4
Dr Caroline Lemerle	ACIAR, Research Program Manager, Agricultural Systems Management 1 July 2009 to 30 June 2011	2
Mr Albert Blair	ACIAR, Chief Finance Officer (commenced 23 May 2010) (ex-officio)	1 (of 1 eligible to attend)

Secretariat support is provided by the Finance Unit, with the Accountant acting as Secretary.

Past members		Meetings attended
Mr Paul Tyrrell	Finance Manager (until 19 May 2010) (ex-officio)	2 (of 3 eligible to attend)
Mr Len Early	Chair, External Member (until 31 December 2009)	2 (of 2 eligible to attend)

Each committee meeting is supported by advisers from our external auditors (Australian National Audit Office), internal auditors (RSM Bird Cameron) and the Centre's Finance Section.

Internal audit

RSM Bird Cameron was contracted to undertake various internal audit reviews to support the Committee. Internal audit reviews conducted in 2009–10 were:

- Project Information System ACIAR (PISA)
- Certificate of compliance.

Certification of fraud measures

The Centre's fraud control plan and current risk assessment comply with the *Commonwealth Fraud Control Guidelines* issued in May 2002. Measures relating to the reporting of fraud and controls against fraud are included in the Chief Executive Instructions. These instructions also stipulate that the CEO must report on fraud control to the Minister. The CEO, as Agency Head, certifies that ACIAR 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 is responsible for overseeing 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.

CHIEF FINANCE OFFICER'S REVIEW

With effect from 1 July 2009, ACIAR's operations were split between administered and departmental activities, with corresponding changes to the agency's appropriations. Departmental activities involve the use of assets, liabilities, income and expenses controlled or incurred by ACIAR in its own right (costs of running the business). Administered activities involve the management or oversight by ACIAR, on behalf of the Australian Government, of items controlled or incurred by the government (program delivery).

The agency's departmental and administered activities are segregated in the financial statements. As all activity in the prior year was classified as departmental, comparative figures for 2009 remain departmental and there are no comparatives for administered activity.

Departmental activity

The net operating result for 2009–10 was a surplus of $0.799 million. This has been added to reserves.

Revenue was mainly a direct appropriation of $9.808 million supplemented by a small amount of other income. The main components of departmental expenditure were staff costs of $6.229 million, operating expenses (e.g. property expenses, travel, IT, communications) of $2.589 million and depreciation/amortisation of $0.249 million.

Administered activity

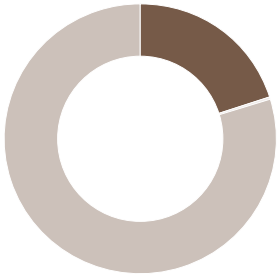
Total administered funds appropriated to ACIAR for 2009–10 were $54.081 million. Of this, $53.982 million was utilised, leaving $0.099 million unutilised. This amount will lapse and thus not be available to ACIAR in the next financial period.

Total program expenditure for 2009–10 was $69.921 million. This included $15,940 million expenditure of monies received under separate records of understanding with AusAID.

The charts below present a summary picture of total departmental and administered revenue and expenditure for 2009–10 compared with 2008–09. Administered revenue for 2009–10 (included in appropriation revenue) is the non-lapsing portion of the total available administered appropriation as approved by the government.

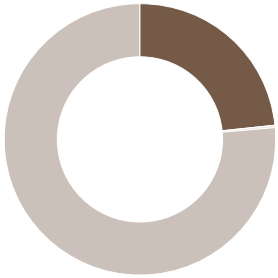
Of particular note is the fact that grant expenditure has increased from 2008–09 in both real and percentage terms, with a corresponding reduction in support costs.

ACIAR revenue 2009–10



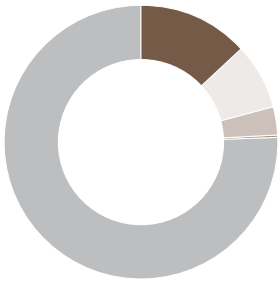
- External funds **20.0%**
- Other **0.1%**
- Appropriation **79.9%**

ACIAR revenue 2008–09



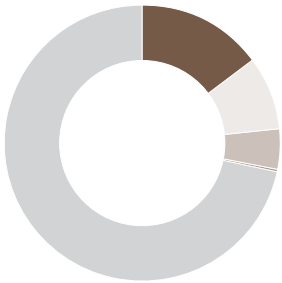
- External funds **23.4%**
- Other **0.2%**
- Appropriation **76.4%**

ACIAR expenditure 2009–10



- Employees **7.9%**
- Suppliers **3.3%**
- Depreciation **0.3%**
- Grants **75.4%**
- Other program expenditure **13.1%**

ACIAR expenditure 2008–09



- Employees **8.6%**
- Suppliers **4.6%**
- Depreciation **0.4%**
- Grants **71.5%**
- Other program expenditure **14.9%**

Accounting policies

ACIAR complies with relevant accounting standards, legislation and the Finance Minister's Orders.

FINANCIAL STATEMENTS

Australian National Audit Office

INDEPENDENT AUDITOR'S REPORT

To the Minister for Foreign Affairs

Scope

I have audited the accompanying financial statements of Australian Centre for International Agriculture Research for the year ended 30 June 2010, which comprise: a Statement by the Chief Executive and Chief Finance Officer; Statement of Comprehensive Income; Balance Sheet; Statement of Changes in Equity; Cash Flow Statement; Schedule of Commitments; Schedule of Contingencies; Schedule of Asset Additions; Schedule of Administered Items and Notes to and forming part of the Financial Statements, including a Summary of Significant Accounting Policies.

The Responsibility of the Chief Executive for the Financial Statements

The Australian Centre for International Agriculture 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*, including the Australian Accounting Standards (which include the Australian Accounting Interpretations). This responsibility includes establishing and maintaining internal controls 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. I have conducted my audit 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 as to whether the financial statements are free from material misstatement.

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 controls relevant to the Australian Centre for International Agriculture Research's preparation and fair presentation of the financial statements in order to design

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

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 Agriculture Research's internal controls. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the Australian Centre for International Agriculture 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 requirements of the Australian accounting profession.

Auditor's Opinion

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

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

(b) give a true and fair view of the matters required by the Finance Minister's Orders including the Australian Centre for International Agriculture Research's financial position as at 30 June 2010 and its financial performance and cash flows for the year then ended.

Australian National Audit Office

Kristian Gage
Senior Director

Delegate of the Auditor-General

Canberra
31 August 2010

Statement by 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 2010 are 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.....

Nick Austin
Chief Executive Officer

31 August 2010

Signed.....

Albert Blair
Chief Finance Officer

31 August 2010

Australian Centre for International Agricultural Research

Statement of Comprehensive Income

for the period ended 30 June 2010

	Notes	2010 $'000	2009 $'000
EXPENSES			
Administration			
Employee benefits	3A	**6,229**	5,907
Supplier expenses	3B	**2,589**	3,117
Depreciation and amortisation	3C	**249**	299
Losses from asset sales	3D	**-**	11
Program expenditure			
Grants	3E	**-**	48,900
Other program expenditure	3F	**-**	10,216
Total expenses		**9,067**	68,450
LESS:			
OWN-SOURCE INCOME			
Own-source revenue			
Sale of goods and rendering of services	4A	**22**	12
Other revenue	4B	**4**	112
Total own-source revenue		**26**	124
Gains			
Sale of assets	4C	**11**	-
Other gains	4D	**21**	21
Total gains		**32**	21
Total own-source income		**58**	145
Net cost of services		**9,009**	68,305
Revenue from Government	4E	**9,808**	52,333
External funds	4F	**-**	16,006
Surplus attributable to the Australian Government		**799**	34
OTHER COMPREHENSIVE INCOME			
Total comprehensive income attributable to the Australian Government		**799**	34

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

Australian Centre for International Agricultural Research

Balance Sheet

as at 30 June 2010

	Notes	2010 $'000	2009 $'000	2008 [1] $'000
ASSETS				
Financial Assets				
Cash and cash equivalents	5A	**218**	3,937	3,937
Trade and other receivables	5B	**2,616**	3,194	3,194
Total financial assets		**2,834**	7,131	7,131
Non-Financial Assets				
Land and buildings	6A,C	**207**	372	372
Property, plant and equipment	6B,C	**249**	309	309
Intangibles	6D,E	**91**	168	168
Other non-financial assets	6F	**74**	205	205
Total non-financial assets		**621**	1,054	1,054
Total Assets		**3,455**	8,185	8,185
LIABILITIES				
Payables				
Suppliers	7A	**265**	124	236
Grants	7B	**-**	1,864	2,419
Other payables	7C	**352**	5,825	3,641
Total payables		**617**	7,813	6,296
Provisions				
Employee provisions	8A	**1,295**	1,257	1,179
Total provisions		**1,295**	1,257	1,179
Total Liabilities		**1,912**	9,070	7,475
Net Assets		**1,543**	(885)	710
EQUITY				
Reserves		**325**	325	325
Retained surplus		**1,218**	419	385
Total Equity		**1,543**	744	710

[1]To restate balances as at the beginning of the earliest comparative period to which changes have been applied as per paragraph 10(f) of AASB 101 *Presentation of Financial Statements.*

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 period ended 30 June 2010

	Notes	Retained earnings		Reserves		Total equity	
		2010	2009	**2010**	2009	**2010**	2009
		$'000	$'000	**$'000**	$'000	**$'000**	$'000
Opening balance							
Balance carried forward from previous period		**419**	385 [1]	**325**	325	**744**	710
Adjustment for errors		**-**	-	**-**	-	**-**	-
Adjustment for changes in accounting policies		**-**	-	**-**	-	**-**	-
Adjusted opening balance		**419**	385	**325**	325	**744**	710
Comprehensive income							
Surplus for the period		**799**	34	**n/a**	n/a	**799**	34
Total comprehensive income		**799**	34	**-**	-	**799**	34
Closing balance as at 30 June		**1,218**	419	**325**	325	**1,543**	744
Closing balance attributable to the Australian Government		**1,218**	419	**325**	325	**1,543**	744

[1]Refer Note 7C and Note 8A

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

Australian Centre for International Agricultural Research

Cash Flow Statement

for the period ended 30 June 2010

	Notes	2010 $'000	2009 $'000
OPERATING ACTIVITIES			
Cash received			
Goods and services		**22**	11
Appropriations		**10,259**	51,766
Net GST received		**1,010**	3,336
External funds		**-**	17,976
Other		**4**	5
Total cash received		**11,295**	73,094
Cash used			
Employees		**6,115**	5,701
Suppliers		**2,391**	3,609
Grants		**1,948**	52,657
Other program expenditure		**710**	9,793
Transfer to special account (administered)		**4,938**	-
Total cash used		**16,102**	71,760
Net cash (used by) from operating activities	10	**(4,807)**	1,334
INVESTING ACTIVITIES			
Cash received			
Proceeds from sales of property, plant and equipment		**18**	6
Total cash received		**18**	6
Cash used			
Purchase of property, plant and equipment		**128**	133
Purchase of intangibles		**-**	9
Total cash used		**128**	142
Net cash (used by) investing activities		**(110)**	(136)
Net (decrease) increase in cash held		**(4,917)**	1,198
Cash and cash equivalents at the beginning of the reporting period		**5,135**	3,937
Cash and cash equivalents at the end of the reporting period	5A	**218**	5,135

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 2010

	2010	2009
BY TYPE	**$'000**	$'000
Commitments receivable		
GST recoverable on commitments	**(192)**	(355)
Total commitments receivable	**(192)**	(355)
Commitments payable		
Capital commitments[1]		
Property, plant and equipment	**87**	-
Total capital commitments	**87**	-
Other commitments		
Operating leases[2]	**2,067**	2,655
Project commitments	**-**	52,453
Other[3]	**73**	-
Total other commitments	**2,140**	55,108
Net commitments by type	**2,035**	54,753
BY MATURITY		
Commitments receivable		
Other commitments receivable		
One year or less	**(68)**	(157)
From one to five years	**(124)**	(198)
Total other commitments receivable	**(192)**	(355)
Commitments payable		
Capital commitments		
One year or less	**87**	-
Total capital commitments	**87**	-
Operating lease commitments		
One year or less	**624**	620
From one to five years	**1,443**	2,035
Total operating lease commitments	**2,067**	2,655
Other commitments		
One year or less	**73**	25,805
From one to five years	**-**	26,648
Total other commitments	**73**	52,453
Net commitments by maturity	**2,035**	54,753

NB: Commitments are GST inclusive where relevant.

[1]Capital commitments are commitments relating to the purchase of IT equipment.

[2]Operating leases are effectively non-cancellable and comprise:
- lease of office accommodation at ACIAR House in Canberra, and
- lease of a motor vehicle.

[3]Other commitments include commitments relating to the purchase of IT services and general office services.

This schedule should be read in conjunction with the accompanying notes.

Australian Centre for International Agricultural Research

Schedule of Contingencies

as at 30 June 2010

There are no quantifiable contingent assets or contingent liabilities as at 30 June 2010 (30 June 2009: $nil).

There are no unquantifiable or remote contingencies at 30 June 2010 (30 June 2009: $nil).

Australian Centre for International Agricultural Research

Schedule of Asset Additions

for the period ended 30 June 2010

The following non-financial non-current assets were added in 2009-10:

	Land and buildings $'000	**Property, plant and equipment $'000**	**Intangibles $'000**	**Total $'000**
By purchase - appropriation ordinary annual services	**2**	**126**	**-**	**128**
Total additions	**2**	**126**	**-**	**128**

The following non-financial non-current assets were added in 2008-09:

	Land and buildings $'000	Property, plant and equipment $'000	Intangibles $'000	Total $'000
By purchase - appropriation ordinary annual services	49	84	9	142
Total additions	49	84	9	142

Australian Centre for International Agricultural Research

Schedule of Administered Items

	Notes	2010 $'000	2009 $'000
Income administered on behalf of Government *for the period ended 30 June 2010*			
Revenue			
Non-taxation revenue			
External funds	15A	**15,940**	-
Other revenue	15B	**452**	-
Total non-taxation revenue		**16,392**	-
Total revenues administered on behalf of Government		**16,392**	-
Total income administered on behalf of Government		**16,392**	-
Expenses administered on behalf of Government *for the period ended 30 June 2010*			
Grants	16A	**59,608**	-
Other program expenses	16B	**10,313**	-
Total expenses administered on behalf of Government		**69,921**	-

This schedule should be read in conjunction with the accompanying notes.

	Notes	2010 $'000	2009 $'000
Assets administered on behalf of Government *as at 30 June 2010*			
Financial assets			
Cash and cash equivalents	17A	**28,159**	-
Receivables	17B	**1,143**	-
Total financial assets		**29,302**	-
Non-financial assets			
Other	17C	**125**	-
Total non-financial assets		**125**	-
Total assets administered on behalf of Government		**29,427**	-
Liabilities administered on behalf of Government *as at 30 June 2010*			
Payables			
Suppliers	18A	**119**	-
Grants	18B	**654**	-
Other	18C	**29,343**	-
Total payables		**30,116**	-
Total liabilities administered on behalf of Government		**30,116**	-

This schedule should be read in conjunction with the accompanying notes.

Australian Centre for International Agricultural Research

Schedule of Administered Items

	Notes	2010 $'000	2009 $'000
Administered Cash Flows			
for the period ended 30 June 2010			
OPERATING ACTIVITIES			
Cash received			
Special account (departmental) transfer		**4,938**	-
External funds		**39,154**	-
Net GST received		**3,027**	-
Other		**428**	-
Total cash received		**47,547**	-
Cash used			
Grant payments		**62,151**	-
Suppliers		**10,993**	-
Total cash used		**73,144**	-
Net cash flows (used by) operating activities		**(25,597)**	-
Net (Decrease) in Cash Held		**(25,597)**	-
Cash and cash equivalents at the beginning of the reporting period		**-**	-
Cash from Official Public Account for:			
-Appropriations		**57,261**	-
		57,261	-
Cash to Official Public Account for:			
- Appropriations		**(3,505)**	-
		(3,505)	-
Cash and cash equivalents at the end of the reporting period	17A	**28,159**	-

This schedule should be read in conjunction with the accompanying notes.

Australian Centre for International Agricultural Research

Schedule of Administered Items

	2010 $'000	2009 $'000
Administered Commitments		
as at 30 June 2010		
BY TYPE		
Commitments receivable		
GST recoverable on commitments	**(6,123)**	-
Total commitments receivable	**(6,123)**	-
Commitments payable		
Other commitments		
Project commitments	**90,963**	-
Total other commitments	**90,963**	-
Net commitments by type	**84,840**	-
BY MATURITY		
Commitments receivable		
Other commitments receivable		
One year or less	**(2,671)**	
From one to five years	**(3,452)**	-
Total other commitments receivable	**(6,123)**	-
Commitments payable		
Other commitments		
One year or less	**38,293**	-
From one to five years	**52,670**	-
Total other commitments	**90,963**	-
Net commitments by maturity	**84,840**	-

NB: Commitments are GST inclusive where relevant.

Project commitments comprise amounts payable under research and development and associated support agreements in respect of which the engaged party is yet to perform the services required.

This schedule should be read in conjunction with the accompanying notes.

Administered Contingencies
as at 30 June 2010

There are no quantifiable contingent assets or contingent liabilities as at 30 June 2010 (30 June 2009 : $nil).

There are no unquantifiable or remote contingencies as at 30 June 2010 (30 June 2009 : $nil).

Administered Asset Additions
for the period ended 30 June 2010

There were no administered asset additions in the year ending 30 June 2010 (30 June 2009 : $nil).

ACIAR administers international agricultrual research and development on behalf of the Government.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 1: Summary of Significant Accounting Policies

Note 2: Events After the Reporting Period

Note 3: Expenses

Note 4: Income

Note 5: Financial Assets

Note 6: Non-Financial Assets

Note 7: Payables

Note 8: Provisions

Note 9: Restructuring

Note 10: Cash Flow Reconciliation

Note 11: Contingent Liabilities and Assets

Note 12: Senior Executive Remuneration

Note 13: Remuneration of Auditors

Note 14: Financial Instruments

Note 15: Income Administered on Behalf of Government

Note 16: Expenses Administered on Behalf of Government

Note 17: Assets Administered on Behalf of Government

Note 18: Liabilities Administered on Behalf of Government

Note 19: Administered Reconciliation Table

Note 20: Administered Contingent Assets and Liabilities

Note 21: Administered Financial Instruments

Note 22: Appropriations

Note 23: Special Accounts

Note 24: Compensation and Debt Relief

Note 25: Reporting of Outcomes

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 1: Summary of Significant Accounting Policies

1.1 Objectives of ACIAR

The Australian Centre for International Agricultural Research (ACIAR) is an Australian Government controlled entity. 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:

Outcome 1: Agriculture in developing countries and Australia is more productive and sustainable result of better technologies, practices, policies and systems.

Prior to 1 July 2009 ACIAR's activities contributing towards this outcome were classified as departmental.

From 1 July 2009 ACIAR's activities contributing towards this outcome are classified as either departmental or administered. Departmental activities involve the use of assets, liabilities, income and expenses controlled or incurred by ACIAR in its own right. Administered activities involve the management or oversight by ACIAR, on behalf of the Government, of items controlled or incurred by the Government.

In meeting its outcome ACIAR conducts the following administered activity:

International agricultural research and development.

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 dependent on Government policy and on continuing appropriations by Parliament for ACIAR's administration and programs.

1.2 Basis of Preparation of the Financial Statements

The financial statements are required by section 49 of the *Financial Management and Accountability Act 1997* and are general purpose financial statements.

The financial statements have been prepared in accordance with:

- Finance Minister's Orders (FMOs) for reporting periods ending on or after 1 July 2009; and
- Australian Accounting Standards and Interpretations issued by the Australian Accounting Standards Board (AASB) that apply for the reporting period.

The financial statements have been prepared on an accrual basis and in accordance with the historical cost convention, except for certain assets and liabilities at fair value. Except where stated, no allowance is made for the effect of changing prices on the results or the financial position.

The financial statements are presented in Australian dollars and values are rounded to the nearest thousand dollars unless otherwise specified.

Unless an 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 the entity or a future sacrifice of economic benefits will be required 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 that are unrecognised are reported in the schedule of commitments or the schedule of contingencies.

Unless alternative treatment is specifically required by an accounting standard, income and expenses are recognised in the statement of comprehensive income when and only when the flow, consumption or loss of economic benefits has occurred and can be reliably measured.

Administered revenues, expenses, assets and liabilities and cash flows reported in the Schedule of Administered Items and related notes are accounted for on the same basis and using the same policies as for departmental items, except where otherwise stated at Note 1.18.

1.3 Significant Accounting Judgements and Estimates

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

- property, plant and equipment is periodically revalued to estimated fair values.

No accounting assumptions and 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 New Australian Accounting Standards

Adoption of New Australian Accounting Standard Requirements

No accounting standard has been adopted earlier than the application date as stated in the standard.

New standards/revised standards/interpretations/amending standards that were issued prior to the signing of the statement by the chief executive officer and chief finance officer and are applicable to the current reporting period did not have a financial impact, and are not expected to have a future financial impact on the entity.

Future Australian Accounting Standard Requirements

New standards/revised standards/interpretations/amending standards that were issued prior to the signing of the statement by the chief executive officer and chief finance officer and are applicable to the future reporting period are not expected to have a future financial impact on the entity.

1.5 Revenue

Revenue from Government

Amounts appropriated for departmental outputs for the year (adjusted for any formal additions and reductions) are recognised as revenue when the ACIAR gains control of the appropriation, 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 Types of Revenue

Revenue from the sale of goods is recognised when:

- the risks and rewards of ownership have been transferred to the buyer;
- the agency retains no managerial involvement or effective control over the goods;
- the revenue and transaction costs incurred can be reliably measured; and
- 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; and
- the probable economic benefits associated 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 that costs incurred to date bear to the estimated total costs of the transaction.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Receivables for goods and services, which have 30 day terms, are recognised at the nominal amounts due, less any impairment allowance account. Collectability of debts is reviewed at end of the reporting period. Allowances are made when collectability of the debt is no longer probable.

Interest revenue is recognised using the effective interest method as set out in AASB 139 *Financial Instruments: Recognition and Measurement*.

1.6 Gains

Resources Received Free of Charge

Resources 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.

Resources received free of charge are recorded as either revenue or gains depending on their nature.

Contributions of assets at no cost of acquisition or for nominal consideration are recognised as gains at their fair value when the asset qualifies for recognition, unless received from another Government agency or authority as a consequence of a restructuring of administrative arrangements (Refer to Note 1.7).

Sale of Assets

Gains from disposal of 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 had no such distributions in 2009-10 ($nil: 2008-09).

1.8 Employee Benefits

Liabilities for 'short-term employee benefits' (as defined in AASB 119 *Employee Benefits*), including those payable on resignation or retirement under employment contracts of overseas staff, and termination benefits due within twelve months of end of reporting period, 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 benefit liabilities are measured at the present value of the estimated future cash outflows to be made in respect of services provided by employees 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 entitlement for sick leave.

The leave liabilities are calculated on the basis of employees' remuneration at the estimated salary rates that will applied at the time the leave is taken, including ACIAR's employer superannuation contribution rates to the extent that the leave is likely to be taken during service rather than paid out on termination.

The liability for long service leave has been determined by reference to the shorthand method. The estimate of the present value of the liability takes into account attrition rates and pay increases through promotion and inflation.

Separation and Redundancy

Provision is made for separation and redundancy benefit payments. ACIAR recognises a provision for termination when it has developed a detailed formal plan for the terminations and has informed those employees affected that it will carry out the terminations.

Superannuation

Staff of ACIAR are members of the Commonwealth Superannuation Scheme (CSS), the Public Sector Superannuation Scheme (PSS), the PSS accumulation plan (PSSap) or an approved superannuation scheme of their choice.

The CSS and PSS are defined benefit schemes for the Australian Government. The PSSap and all other approved superannuation schemes are defined contribution schemes.

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. This liability is reported by the Department of Finance and Deregulation as an administered item.

For CSS and PSS members, ACIAR makes employer contributions to the employee superannuation scheme at rates determined by an actuary to be sufficient to meet the current cost to the Government of the superannuation entitlements of ACIAR's employees. ACIAR accounts for the contributions as if they were contributions to defined contribution plans. For PSSap and all other approved superannuation schemes, ACIAR, as employer, contributes a minimum of 9% of superannuable salaries.

The liability for superannuation recognised as at 30 June represents outstanding contributions for the period between employees' final pay in 2009-10 and 30 June 2010.

1.9 Leases

A distinction is made between finance leases and operating leases. Finance leases effectively transfer from the lessor to the lessee substantially all the risks and rewards incidental to ownership of leased assets. An operating lease is a lease that is not a finance lease. In operating leases, the lessor effectively retains substantially all such risks and benefits.

ACIAR has no finance leases.

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

1.10 Cash

Cash and cash equivalents include cash on hand, cash held with outsiders, and demand deposits in bank accounts with an original maturity of 3 months or less that are readily convertible to known amounts of cash and subject to insignificant risk of changes in value. Cash is recognised at its nominal amount.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

1.11 Financial Assets

ACIAR classifies its financial assets in the following categories and currently only has assets in the "loans and receivables" category:

· financial assets at fair value through profit or loss;

· held-to-maturity investments;

· available-for-sale financial assets; and

· loans and receivables.

The classification depends on the nature and purpose of the financial assets and is determined at the time of initial recognition.

Financial assets are recognised and derecognised upon trade date.

Effective Interest Method

The effective interest method is a method of calculating the amortised cost of a financial asset and of allocating interest income over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash receipts through the expected life of the financial asset, or, where appropriate, a shorter period.

Income is recognised on an effective interest rate basis except for financial assets that are recognised at fair value through profit or loss.

Loans and Receivables

Trade receivables, loans and other receivables that have fixed or determinable payments that are not quoted in an active market are classified as 'loans and receivables'. Loans and receivables are measured at amortised cost using the effective interest method less impairment. Interest is recognised by applying the effective interest rate.

Impairment of Financial Assets

Financial assets are assessed for impairment at the end of each reporting periods.

· *Financial assets held at amortised cost* - if there is objective evidence that an impairment loss has been incurred for loans and receivables or held to maturity investments held at amortised cost, 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 statement of comprehensive income.

· *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 statement of comprehensive income.

· *Financial assets held at cost* - If there is objective evidence that an impairment loss has been incurred 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.

1.12 Financial Liabilities

Financial liabilities are classified as either financial liabilities 'at fair value through profit or loss' or other financial liabilities.

Financial liabilities are recognised and derecognised upon 'trade date'.

Financial Liabilities at Fair Value Through Profit or Loss

Financial liabilities at fair value through profit or loss are initially measured at fair value. Subsequent fair value adjustments are recognised in profit or loss. The net gain or loss recognised in profit or loss incorporates any interest paid on the financial liability.

Other Financial Liabilities

Other financial liabilities, including borrowings, are initially measured at fair value, net of transaction costs.

Other financial liabilities are subsequently measured at amortised cost using the effective interest method, with interest expense recognised on an effective yield basis.

The effective interest method is a method of calculating the amortised cost of a financial liability and of allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments through the expected life of the financial liability, or, where appropriate, a shorter period.

Supplier and other payables are recognised at amortised cost. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).

1.13 Contingent Liabilities and Contingent Assets

Contingent liabilities and contingent assets are not recognised in the balance sheet but are reported in the relevant schedules and notes. They may arise from uncertainty as to the existence of a liability or asset or represent an asset or liability in respect of which the amount cannot be reliably measured. Contingent assets are disclosed when settlement is probable but not virtually certain and contingent liabilities are disclosed when settlement is greater than remote.

1.14 Acquisition of Assets

Assets are recorded at cost on acquisition except as stated below. 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 income 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 the restructuring.

1.15 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).

The initial cost of an asset includes an estimate of the cost of dismantling and removing the item and restoring the site on which it is located.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Revaluations

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

Asset class	**Fair value measured as:**
Leasehold improvements	Depreciated replacement cost
Plant and equipment	Market selling price

Following initial recognition at cost, property, plant and equipment are carried at fair value less subsequent 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 of asset revaluation reserve except to the extent that it reverses a previous revaluation decrement of the same asset class that was previously recognised in the surplus/deficit. Revaluation decrements for a class of assets are recognised directly in the surplus/deficit 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

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.

Depreciation rates (useful lives), residual values and methods are reviewed at each reporting 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 assets are based on the following useful lives:

	2010	2009
Leasehold improvements	**Lease term**	Lease term
Plant and equipment	**5 to 10 years**	5 to 10 years
Computer equipment	**3 to 5 years**	3 to 5 years

Impairment

All assets were assessed for impairment at 30 June 2010. Where indications of impairment exist, the asset's recoverable amount is estimated and an impairment adjustment 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.

Derecognition

An item of property, plant and equipment is derecognised upon disposal or when no further future economic benefits are expected from its use.

1.16 Intangibles

ACIAR's intangibles consist of commercially purchased software for internal use. These assets are carried at cost less accumulated amortisation and accumulated impairment losses.

Software is amortised on a straight-line basis over its anticipated useful life. The useful life of ACIAR's software is 5 to 10 years (2008-09: 5 to 10 years).

All software assets were assessed for indications of impairment as at 30 June 2010.

1.17 Taxation / Competitive Neutrality

ACIAR is exempt from all forms of taxation except Fringe Benefits Tax (FBT) 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
- for receivables and payables.

Competitive Neutrality

ACIAR provides services on a not for-profit basis. Under Competitive Neutrality arrangements, ACIAR is not required to make Australian Income Tax Equivalent payments to the Government.

1.18 Reporting of Administered Activities

Administered revenues, expenses, assets, liabilities and cash flows are disclosed in the schedule of administered items and related notes.

Except where otherwise stated below, administered items are accounted for on the same basis and using the same policies as for departmental items, including the application of Australian Accounting Standards.

Administered Cash Transfers to and from the Official Public Account

Revenue collected by ACIAR for use by the Government rather than the agency is administered revenue. Collections are transferred to the Official Public Account (OPA) maintained by the Department of Finance and Deregulation. Conversely, cash is drawn from the OPA to make payments under Parliamentary appropriation on behalf of Government. These transfers to and from the OPA are adjustments to the administered cash held by the agency on behalf of the Government and reported as such in the statement of cash flows in the schedule of administered items and in the administered reconciliation table in Note 19.

Revenue

All administered revenues are revenues relating to the course of ordinary activities performed by the Agency on behalf of the Australian Government.

Revenue consists of external funds received in support of ACIAR's outcome. External funds are recognised as revenue when ACIAR obtains control over those funds.

Loans and Receivables

Where loans and receivables are not subject to concessional treatment, they are carried at amortised cost using the effective interest method. Gains and losses due to impairment, derecognition and amortisation are recognised through profit or loss.

Grants

ACIAR administers a number of grants on behalf of the Government.

Grant and subsidy liabilities are recognised to the extent that (i) the services required to be performed by the grantee have been performed or (ii) the grant eligibility criteria have been satisfied, but payments due have not been made. A commitment is recorded when the Government enters into an agreement to make these grants but services have not been performed or recognition criteria not satisfied.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 2: Events After the Reporting Period

There have been no events or transactions after reporting date which could materially affect the financial statements.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 3: Expenses

	2010 **$'000**	2009 $'000
Note 3A: Employee Benefits		
Wages and salaries	**4,941**	4,838
Superannuation:		
Defined contribution plans	**156**	159
Defined benefit plans	**562**	543
Leave and other entitlements[1]	**522**	367
Separation and redundancies	**48**	-
Total employee benefits	**6,229**	5,907
Note 3B: Supplier Expenses		
Goods and services		
Travel	**403**	474
Property	**688**	702
Information management	**255**	334
Other	**1,243**	1,607
Total goods and services	**2,589**	3,117
Goods and services are made up of:		
Provision of goods – external parties	**119**	127
Rendering of services – related entities	**375**	469
Rendering of services – external parties	**1,505**	1,882
Total goods and services	**1,999**	2,478
Other supplier expenses		
Operating lease rentals – external parties:		
Minimum lease payments[2]	**558**	611
Workers compensation expenses	**32**	28
Total other supplier expenses	**590**	639
Total supplier expenses	**2,589**	3,117
Note 3C: Depreciation and Amortisation		
Depreciation:		
Land and buildings	**108**	99
Property, plant and equipment	**106**	157
Total depreciation	**214**	256
Amortisation:		
Intangibles:		
Computer software	**35**	43
Total amortisation	**35**	43
Total depreciation and amortisation	**249**	299

[1]Refer Note 8A

[2]Refer Note 7C

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 3: Expenses - cont.

	2010 $'000	2009 $'000
Note 3D: Losses from Asset Sales		
Property, plant and equipment:		
Proceeds from sale	-	(6)
Carrying value of assets sold	-	9
Intangibles:		
Carrying value of assets sold	-	8
Total losses from asset sales	-	11
Note 3E: Grants		
Public sector:		
Australian Government entities (related entities)	-	3,471
Private sector:		
Non-profit organisations	-	34,593
Overseas	-	10,836
Total grants	-	48,900
Note 3F: Other Program Expenditure		
Training	-	7,448
Communications research	-	780
Other research	-	1,988
Total other program expenditure	-	10,216

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 4: Income

	2010	2009
REVENUE	**$'000**	$'000
Note 4A: Sale of Goods and Rendering of Services		
Provision of goods - external parties	**22**	12
Total sale of goods and rendering of services	**22**	12
Note 4B: Other Revenue		
Project returns	**-**	104
Miscellaneous revenue	**4**	8
Total other revenue	**4**	112
GAINS		
Note 4C: Sale of Assets		
Property, plant and equipment		
Proceeds from sale	**18**	-
Carrying value of assets sold	**(7)**	-
Net gain from sale of assets	**11**	-
Note 4D: Other Gains		
Resources received free of charge	**21**	21
Total other gains	**21**	21
REVENUE FROM GOVERNMENT		
Note 4E: Revenue from Government		
Appropriations:		
Departmental outputs[1]	**9,808**	52,333
Total revenue from Government	**9,808**	52,333
Note 4F: External Funds		
AusAID contributions	**-**	15,886
Other Government agencies	**-**	120
Total external funds	**-**	16,006

[1] Departmental outputs include $0.077m quarantined by the Department of Finance and Deregulation pending a review of the funding model for the overseas owned property estate. The outcome of the review will be considered by Government in the context of the 2011-12 Budget.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 5: Financial Assets

	2010 **$'000**	2009 $'000	2008 $'000
Note 5A: Cash and Cash Equivalents			
Special Account	**-**	4,938	3,476
Cash on hand or on deposit	**218**	197	461
Total cash and cash equivalents	**218**	5,135	3,937
Note 5B: Trade and Other Receivables			
Goods and services:			
Goods and services - related entities	**30**	-	38
Total receivables for goods and services	**30**	-	38
Appropriations receivable:			
For existing outputs	**2,306**	2,757	2,190
Total appropriations receivable	**2,306**	2,757	2,190
Other receivables:			
GST receivable from the Australian Taxation Office	**40**	852	554
Other	**240**	167	412
Total other receivables	**280**	1,019	966
Total trade and other receivables (gross)	**2,616**	3,776	3,194
Less impairment allowance account:			
Goods and services	**-**	-	-
Other	**-**	-	-
Total impairment allowance account	**-**	-	-
Total trade and other receivables (net)	**2,616**	3,776	3,194
Receivables are expected to be recovered in:			
No more than 12 months	**2,616**	3,776	3,194
More than 12 months	**-**	-	-
Total trade and other receivables (net)	**2,616**	3,776	3,194
Receivables are aged as follows:			
Not overdue	**2,586**	3,691	3,106
Overdue by:			
0 to 30 days	**-**	-	-
31 to 60 days	**-**	83	38
61 to 90 days	**-**	-	-
More than 90 days	**30**	2	50
Total receivables (gross)	**2,616**	3,776	3,194

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 6: Non-Financial Assets

	2010	2009	2008
	$'000	$'000	$'000
Note 6A: Land and Buildings			
Leasehold improvements:			
Fair value	**651**	649	623
Accumulated depreciation	**(444)**	(336)	(251)
Accumulated impairment losses	**-**	-	-
Total leasehold improvements	**207**	313	372
Total land and buildings	**207**	313	372

Revaluations are conducted in accordance with the revaluation policy stated at Note 1. Land and buildings were revalued as at 30 June 2006 by an independent qualified valuer from the Australian Valuation Office.

In the year ended 30 June 2006, a revaluation increment of $325,636 for leasehold improvements was credited to the asset revaluation reserve and included in the equity section of the balance sheet.

No indicators of impairment were found for land and buildings.

No land or buildings are expected to be sold or disposed of within the next 12 months.

Note 6B: Property, Plant and Equipment			
Other property, plant and equipment:			
Fair value	**911**	923	1,065
Accumulated depreciation	**(662)**	(687)	(756)
Accumulated impairment losses	**-**	-	-
Total other property, plant and equipment	**249**	236	309
Total property, plant and equipment	**249**	236	309

Revaluations are conducted in accordance with the revaluation policy stated at Note 1. Property, plant and equipment were revalued as at 30 June 2006 by an independent qualified valuer from the Australian Valuation Office.

In the year ended 30 June 2006, a revaluation decrement of $21,475 for property, plant and equipment was expensed.

No indicators of impairment were found for property, plant and equipment.

No property, plant or equipment is expected to be sold or disposed of within the next 12 months.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 6: Non-Financial Assets - cont.

Note 6C: Reconciliation of the Opening and Closing Balances of Property, Plant and Equipment (2009-10)

	Land and buildings	Property, plant & equipment	Total
	$'000	$'000	$'000
As at 1 July 2009			
Gross book value	**649**	**923**	**1,572**
Accumulated depreciation and impairment	**(336)**	**(687)**	**(1,023)**
Net book value 1 July 2009	**313**	**236**	**549**
Additions:			
By purchase	**2**	**126**	**128**
Depreciation expense	**(108)**	**(106)**	**(214)**
Disposals:			
Other	**-**	**(7)**	**(7)**
Net book value 30 June 2010	**207**	**249**	**456**
Net book value as of 30 June 2010 represented by:			
Gross book value	**651**	**911**	**1,562**
Accumulated depreciation	**(444)**	**(662)**	**(1,106)**
	207	**249**	**456**

Note 6C: Reconciliation of the Opening and Closing Balances of Property, Plant and Equipment (2008-09)

	Land and buildings $'000	Property, plant & equipment $'000	Total $'000
As at 1 July 2008			
Gross book value	623	1,065	1,688
Accumulated depreciation and impairment	(251)	(756)	(1,007)
Net book value 1 July 2008	372	309	681
Additions:			
By purchase	49	84	133
Depreciation expense	(99)	(157)	(256)
Disposals:			
Other	(9)	-	(9)
Net book value 30 June 2009	313	236	549
Net book value as of 30 June 2009 represented by:			
Gross book value	649	923	1,572
Accumulated depreciation	(336)	(687)	(1,023)
	313	236	549

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 6: Non-Financial Assets - cont.

	2010	2009	2008
	$'000	$'000	$'000
Note 6D: Intangibles			
Computer software:			
Purchased	**439**	439	465
Total computer software (gross)	**439**	439	465
Accumulated amortisation	**(348)**	(313)	(297)
Accumulated impairment losses	**-**	-	-
Total computer software (net)	**91**	126	168
Total intangibles	**91**	126	168

No indicators of impairment were found for intangible assets.

No intangibles are expected to be sold or disposed of within the next 12 months.

Note 6E: Reconciliation of the Opening and Closing Balances of Intangibles (2009-10)

	Computer software purchased $'000
As at 1 July 2009	
Gross book value	**439**
Accumulated amortisation and impairment	**(313)**
Net book value 1 July 2009	**126**
Amortisation	**(35)**
Net book value 30 June 2010	**91**
Net book value as of 30 June 2010 represented by:	
Gross book value	**439**
Accumulated amortisation	**(348)**
Accumulated impairment losses	**-**
	91

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 6: Non-Financial Assets - cont.

Note 6E (Cont'd): Reconciliation of the Opening and Closing Balances of Intangibles (2008-09)

	Computer software purchased $'000
As at 1 July 2008	
Gross book value	465
Accumulated amortisation and impairment	(297)
Net book value 1 July 2008	168
Additions:	
By purchase	9
Amortisation	(43)
Disposals:	
Other	(8)
Net book value 30 June 2009	126
Net book value as of 30 June 2009 represented by:	
Gross book value	439
Accumulated amortisation	(313)
Accumulated impairment losses	-
	126

	2010 $'000	2009 $'000	2008 $'000
Note 6F: Other Non-Financial Assets			
Prepayments:			
Suppliers	**74**	228	97
Grants	**-**	-	108
Total other non-financial assets	**74**	228	205
No indicators of impairment were found for other non-financial assets.			
Total other non-financial assets - are expected to be			
No more than 12 months	**74**	228	205
Total other non-financial assets	**74**	228	205

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 7: Payables

	2010 $'000	2009 $'000	2008 $'000
Note 7A: Suppliers			
Trade creditors and accruals	**265**	124	236
Total supplier payables	**265**	124	236
Supplier payables expected to be settled within 12 months:			
Related entities	**11**	-	-
External parties	**254**	124	236
Total supplier payables	**265**	124	236
All supplier payables are expected to be settled within 12 months.			
Settlement is usually made within 30 days.			
Note 7B: Grants			
Grants:			
Private sector:			
Non-profit organisations	**-**	1,622	2,377
Project withholdings	**-**	242	42
Total grants	**-**	1,864	2,419
Total grants are expected to be settled in:			
No more than 12 months	**-**	1,864	2,419
More than 12 months	**-**	-	-
Total grants	**-**	1,864	2,419
Settlement is usually made within 30 days.			
Note 7C: Other Payables			
Salaries and wages	**242**	140	136
Superannuation	**13**	9	5
Unearned revenue	**-**	4,851	3,231
Research publications	**-**	54	56
Other research activities	**-**	713	171
Rent payable[1]	**70**	58	42
Other	**27**	-	-
Total other payables	**352**	5,825	3,641
Total other payables are expected to be settled in:			
No more than 12 months	**285**	5,767	3,599
More than 12 months	**67**	58	42
Total other payables	**352**	5,825	3,641

[1] *Rent payable*

Under AASB 117 – *Leases* ,lease payments under an operating lease should be recognised as an expense on a straight-line basis over the lease term unless another systematic basis is more representative of the time pattern of the user's benefit. ACIAR's practice has been to expense operating lease costs as the cost has been incurred resulting in the need to correct a prior year error.

The lease payable provision and retained earnings were adjusted at 1 July 2008 to establish a provision of $42,000.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 8: Provisions

	2010	2009	2008
	$'000	$'000	$'000
Note 8A: Employee Provisions			
Leave	**1,062**	1,057	997
Other[1]	**233**	200	182
Total employee provisions	**1,295**	1,257	1,179
Employee provisions are expected to be settled in:			
No more than 12 months	**393**	395	365
More than 12 months	**902**	862	814
Total employee provisions	**1,295**	1,257	1,179

[1] *Employee provisions - other*

AASB 119 - *Employee Benefits,* requires an entity to recognise a liability when an employee has provided services in exchange for employee benefits to be paid in the future. Under relevant conditions of employment some overseas staff are entitled to a pay-out, based on years of service, when they voluntarily leave or retire from ACIAR. Due to an oversight this liability has not been recognised in prior year financial statements.

Other employee provisions and retained earnings were adjusted at 1 July 2008 to establish a provision of $182,000.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 9: Restructuring

Note 9A: Departmental Restructuring

There were no restructures in 2008-09.

As a result of a restructuring of administrative arrangements, grants and research expenditure items were reclassifed from departmental items to administered items with effect from 1 July 2009.

No assets or liabilities were transferred to departmental items.

The following assets and liabilities were transferred, at net book value, from departmental items to administered items:

	2010 $'000
Assets transferred	
Cash at bank	4,938
Total assets transferred	4,938
Liabilities transferred	
Unearned revenue	(4,851)
Other payables	(87)
Total liabilities transferred	(4,938)
Net assets/(liabilities) transferred	-

No income or expense items were transferred.

Note 9B: Administered Restructuring

There were no restructures in 2008-09.

As a result of a restructuring of administrative arrangements, grants and research expenditure items were reclassifed from departmental items to administered items with effect from 1 July 2009.

The following assets and liabilities were transferred, at net book value, from departmental items to administered items:

Assets recognised	
Cash at bank	4,938
Total assets recognised	4,938
Liabilities recognised	
Unearned revenue	(4,851)
Other payables	(87)
Total liabilities recognised	(4,938)
Net assets/(liabilities) assumed	-

No assets or liabilities were transferred from administered to departmental items.

No income or expense items were transferred.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 10: Cash Flow Reconciliation

	2010 $'000	2009 $'000
Reconciliation of cash and cash equivalents as per Balance Sheet to Cash Flow Statement		
Cash and cash equivalents as per:		
Cash flow statement	**218**	5,135
Balance sheet	**218**	5,135
Difference	**-**	-
Reconciliation of net cost of services to net cash from operating activities:		
Net cost of services	**(9,009)**	(68,305)
Add revenue from Government	**9,808**	52,333
Add external revenue	**-**	16,006
Adjustments for non-cash items		
Depreciation / amortisation	**249**	299
(Gain) / loss on disposal of assets	**(11)**	11
Changes in assets / liabilities		
Decrease / (increase) in net receivables	**1,160**	(582)
Decrease / (increase) in prepayments	**154**	(23)
Increase in employee provisions	**38**	78
Increase / (decrease) in supplier payables	**141**	(112)
(Decrease) / increase in grants and other payables	**(7,337)**	1,629
Net cash (used by) from operating activities	**(4,807)**	1,334

Note 11: Contingent Liabilities and Assets

Quantifiable Contingencies

At 30 June 2010, ACIAR did not have any quantifiable contingencies (2009: $nil).

Unquantifiable and Significant Remote Contingencies

At 30 June 2010, ACIAR did not have any unquantifiable or significant remote contingencies (2009: $nil).

Note 12: Senior Executive Remuneration

Note 12A: Actual Remuneration Paid to Senior Executives

	2010	2009
The number of senior executives who received*:		
$235,000 to $249,999	**-**	1
$295,000 to $309,999	**1**	1
Total	**1**	2

* Excluding acting arrangements and part-year service.

Total expense recognised in relation to Senior Executive employment

	$	**$**
Short-term employee benefits:		
Salary (including annual leave taken)	**179,926**	411,040
Movement in annual leave provisions	**14,583**	(936)
Other[1]	**88,242**	43,410
Total short-term employee benefits	**282,751**	453,514
Superannuation (post-employment benefits)	**19,344**	76,439
Movement in long service provisions	**4,394**	10,275
Total	**306,489**	540,228

During the year the entity paid $nil in termination benefits to senior executives (2009: $nil).

Note
[1]"Other" includes motor vehicle allowance, other allowances and performance bonus calculated at the maximum potential rate.

Note 12: Senior Executive Remuneration - Cont.

Note 12B: Salary Packages for Senior Executives

Average annualised remuneration packages for substantive Senior Executives

	As at 30 June 2010			As at 30 June 2009		
Total remuneration*:	**No. SES**	**Base salary (including annual leave)**	**Total remuneration package[1]**	No. SES	Base salary (including annual	Total remuneration package[1]
$175,000 to $189,999	**1**	**139,000**	**185,206**	-	-	-
$235,000 to $249,999	**-**	**-**	**-**	1	175,281	240,900
$295,000 to $309,999	**-**	**-**	**-**	1	193,303	305,463
$310,000 to $314,999	**1**	**199,721**	**314,629**	-	-	-
Total	**2**			2		

* Excluding acting arrangements.

Note

[1] The total remuneration package includes:

(a) Agreed base salary (including annual leave)
(b) Motor vehicle and other allowances
(c) Superannuation.

Long service leave is excluded as entitlement to this is not certain until 10 years of service is reached.

Table 12B includes substantive senior executives' remuneration packages as 30 June.

Major differences between Note 12A and 12B

Note 12A discloses senior executive remuneration based upon:

(a) Acutal salary paid during the year (including payment for leave taken)
(b) Movement in annual leave and long service leave provisions (including revaluations of provisions)
(c) Superannuation (post-employment benefits)
(d) Motor vehicle and other allowances.

These amounts may differ to the remuneration package disclosed in Note 12B depending upon: the amount of leave taken during the year, part-year service, periods of leave without pay, acting arrangements, changes to base salary, salary for superannuation purposes and allowances during the year and revaluations of employee provisions.

Note 12A includes part year service where the $145,000 threshold was reached during the year. Note 12B reflects only substantive senior executive packages in existence as at 30 June.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 13: Remuneration of Auditors

	2010 **$'000**	2009 $'000
Financial statement audit services were provided free of charge to the Agency.		
The fair value of the services provided was:		
Audit fee	**21**	21
	21	21

No other services were provided by the Auditor-General.

Note 14: Financial Instruments

Note 14A: Categories of Financial Instruments

Financial Assets		
Cash	**218**	197
Loans and receivables:		
Trade and other receivables	**270**	167
Carrying amount of financial assets	**488**	364
Financial Liabilities		
At amortised cost:		
Other liabilities:		
Trade creditors	**265**	124
Grants	**-**	1,864
Other payables	**97**	825
Carrying amount of financial liabilities	**362**	2,813

The carrying amounts of financial assets and financial liabilities are a reasonable approximation of fair value.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 14: Financial Instruments - cont.

Note 14B: Credit Risk

ACIAR is exposed to minimal credit risk as loans and receivables are trade receivables. The maximum exposure to credit risk is the risk that arises from potential default of a debtor. This amount is equal to the total amount of trade and other receivables (2010: $270,000 and 2009: $167,000). ACIAR has assessed the risk of the default on payment and believes all amounts will be paid in full. No amounts have been allocated to an impairment allowance account.

ACIAR manages its credit risk by undertaking background and credit checks prior to allowing a debtor relationship. In addition, ACIAR has policies and procedures that guide employees debt recovery techniques that are to be applied.

ACIAR holds no collateral to mitigate against credit risk.

Credit quality of financial instruments not past due or individually determined as impaired

	Not past due nor impaired 2010 $'000	Not past due nor impaired 2009 $'000	**Past due or impaired 2010 $'000**	Past due or impaired 2009 $'000
Loans and receivables				
Trade and other receivables	**240**	82	**30**	85
Total	**240**	82	**30**	85

Ageing of financial assets that were past due but not impaired for 2010

	0 to 30 days $'000	**31 to 60 days $'000**	**61 to 90 days $'000**	**90+ days $'000**	**Total $'000**
Loans and receivables					
Trade and other receivables	**-**	-	**-**	**30**	**30**
Total	**-**	**-**	**-**	**30**	**30**

Ageing of financial assets that were past due but not impaired for 2009

	0 to 30 days $'000	31 to 60 days $'000	61 to 90 days $'000	90+ days $'000	Total $'000
Loans and receivables					
Trade and other receivables	-	83	**-**	2	85
Total	-	83	-	2	85

No assets have been assessed as impaired.

Note 14: Financial Instruments - cont.

Note 14C: Liquidity Risk

ACIAR's financial liabilities are payables. The exposure to liquidity risk is based on the notion that ACIAR will encounter difficulty in meeting its obligations associated with financial liabilities.

This is highly unlikely as ACIAR is appropriated funding from the Australian Government and manages its budgeted funds to ensure it has adequate funds to meet payments as they fall due. In addition, ACIAR has policies in place to ensure timely payments are made when due and has no past experience of default.

Maturities for non-derivative financial liabilities 2010

	On demand $'000	Within 1 year $'000	1 to 2 years $'000	2 to 5 years $'000	> 5 years $'000	Total $'000
Other liabilities						
Trade creditors	**-**	**265**	**-**	**-**	**-**	**265**
Other payables	**-**	**30**	**18**	**49**	**-**	**97**
Total	**-**	**295**	**18**	**49**	**-**	**362**

Maturities for non-derivative financial liabilities 2009

	On demand $'000	Within 1 year $'000	1 to 2 years $'000	2 to 5 years $'000	> 5 years $'000	Total $'000
Other liabilities						
Trade creditors	-	124	-	-	-	124
Other payables	-	2,631	3	55	-	2,689
Total	-	2,755	3	55	-	2,813

ACIAR has no derivative financial liabilities in both the current and prior year.

Note 14D: Market Risk

ACIAR holds basic Departmental financial instruments that do not expose it to currency, interest rate or other price risk.
Credit terms for both receivables and payables are normally 30 days net.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Notes to the Schedule of Administered Items

Note 15: Income Administered on Behalf of Government

	2010 $'000	2009 $'000
REVENUE		
Non–Taxation Revenue		
Note 15A: External Funds		
AusAID contributions – related entity	**15,940**	-
Total external funds	**15,940**	-
Note 15B: Other Revenue		
Project returns	**452**	
Total other revenue	**452**	-

Note 16: Expenses Administered on Behalf of Government

	2010 $'000	2009 $'000
EXPENSES		
Note 16A: Grants		
Public sector:		
Australian Government entities (related entities)	**4,515**	-
State and Territory Governments	**10,906**	-
Private sector:		
Non-profit organisations	**22,237**	-
Overseas	**21,950**	-
Total grants	**59,608**	-
Note 16B: Other Program Expenses		
Training	**7,068**	-
Communications research	**593**	-
Other research	**2,652**	-
Total other program expenses	**10,313**	-

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 17: Assets Administered on Behalf of Government

	2010 $'000	2009 $'000
FINANCIAL ASSETS		
Note 17A: Cash and Cash Equivalents		
Special accounts	**28,159**	-
Total cash and cash equivalents	**28,159**	-
Note 17B: Receivables		
Goods and services:		
Goods and services receivable - related entities	**171**	-
Goods and services receivable - external parties	**51**	-
Total receivables for goods and services	**222**	-
Other receivables:		
GST receivable from Australian Taxation Office	**921**	-
Total other receivables	**921**	-
Total receivables (gross)	**1,143**	-
Less impairment allowance account:		
Goods and services	**-**	-
Other	**-**	-
Total impairment allowance account	**-**	-
Total receivables (net)	**1,143**	-
Receivables are expected to be recovered in:		
No more than 12 months	**1,143**	-
Total trade and other receivables (net)	**1,143**	-
Receivables were aged as follows:		
Not overdue	**-**	-
Overdue by:		
0 to 30 days	**1,143**	-
31 to 60 days	**-**	-
61 to 90 days	**-**	-
More than 90 days	**-**	-
Total receivables (gross)	**1,143**	-
Goods and services receivables credit terms were within 30 days (2009: 30 days).		
NON-FINANCIAL ASSETS		
Note 17C: Other Non-Financial Assets		
Prepayments	**125**	-
Total other non-financial assets	**125**	-
No indicators of impairment were found for other non-financial assets.		
Total other non-financial assets - are expected to be recovered in:		
No more than 12 months	**125**	-
Total other non-financial assets	**125**	-

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 18: Liabilities Administered on Behalf of Government

	2010 $'000	2009 $'000
PAYABLES		
Note 18A: Suppliers		
Trade creditors and accruals	**119**	-
Total suppliers	**119**	-
Supplier payables expected to be settled within 12 months:		
Related entities	**7**	-
External parties	**112**	-
Total suppliers	**119**	-
Settlement is usually made within 30 days.		
Note 18B: Grants		
Public sector:		
Australian Government entities (related entities)	**11**	-
State and Territory Governments	**25**	-
Private sector:		
Non-profit organisations	**229**	-
Overseas	**232**	
Project withholdings	**157**	
Total grants	**654**	-
Total grants are expected to be settled in:		
No more than 12 months	**654**	-
Total grants	**654**	-
Settlement is usually made according to the terms and conditions of each grant. This is usually within 30 days of performance or eligibility.		
Note 18C: Other Payables		
Unearned revenue	**28,287**	-
GST payable to OPA	**892**	-
Other	**164**	-
Total other payables	**29,343**	-
Total other payables are expected to be settled in:		
No more than 12 months	**29,343**	-
Total other payables	**29,343**	-

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 19: Administered Reconciliation Table

	2010 $'000	2009 $'000
Opening administered assets less administered liabilities as at 1 July	**-**	-
Adjustment for change in accounting policies	**-**	-
Adjustments for errors	**-**	-
Adjusted opening administered assets less administered liabilities	**-**	-
Plus: Administered income	**16,392**	-
Less: Administered expenses	**(69,921)**	-
Administered transfers to/from Australian Government:		
Appropriation transfers from OPA:		
Annual appropriations for administered expenses (non CAC)	**53,292**	-
Transfers to OPA	**(452)**	-
Closing administered assets less administered liabilities as at 30 June	**(689)**	-

Note 20: Administered Contingent Assets and Liabilities

There are no quantifiable administered contingent assets or administered contingent liabilities as at 30 June 2010 (30 June 2009: $nil).

There are no unquantifiable or remote administered contingencies at 30 June 2010 (30 June 2009: $nil).

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 21: Administered Financial Instruments

	2010 $'000	2009 $'000
Note 21A: Categories of Financial Instruments		
Financial Assets		
Loans and receivables:		
Trade receivables	**222**	-
Carrying amount of financial assets	**222**	-
Financial Liabilities		
Other liabilities:		
Trade creditors	**119**	-
Grants	**654**	-
Other payables	**164**	-
Carrying amount of financial liabilities	**937**	-

The carrying amounts of financial assets and financial liabilities are a reasonable approximation of fair value.

Note 21B: Credit Risk

ACIAR is exposed to minimal credit risk as loans and receivables are trade receivables. The maximum exposure to credit risk is the risk that arises from potential default of a debtor. This amount is equal to the total amount of trade receivables (2010: $222,238 and 2009: $nil). ACIAR has assessed the risk of the default on payment and believes all amounts will be paid in full. No amounts have been allocated to an impairment allowance account.

ACIAR manages its credit risk by undertaking background and credit checks prior to allowing a debtor relationship. In addition, ACIAR has policies and procedures that guide employees debt recovery techniques that are to be applied.

ACIAR holds no collateral to mitigate against credit risk.

Credit quality of financial instruments not past due or individually determined as impaired

	Not past due nor impaired 2010 $'000	Not past due nor impaired 2009 $'000	**Past due or impaired 2010 $'000**	Past due or impaired 2009 $'000
Loans and receivables				
Trade receivables	**222**	-	**222**	-
Total	**222**	-	**222**	-

No financial assets were past due but not impaired for 2010.

ACIAR had no Administered financial assets at 30 June 2009.

No assets have been assessed as impaired.

Note 21: Administered Financial Instruments - cont.

Note 21C: Liquidity Risk

ACIAR's financial liabilities are payables. The exposure to liquidity risk is based on the notion that ACIAR will encounter difficulty in meeting its obligations associated with financial liabilities.

This is highly unlikely as ACIAR is appropriated funding from the Australian Government and manages its budgeted funds to ensure it has adequate funds to meet payments as they fall due. In addition, ACIAR has policies in place to ensure timely payments are made when due and has no past experience of default.

Maturities for non-derivative financial liabilities 2010

	On demand $'000	Within 1 year $'000	1 to 2 years $'000	2 to 5 years $'000	> 5 years $'000	Total $'000
Other liabilities						
Trade creditors	-	119	-	-	-	119
Grants	-	654	-	-	-	654
Other payables	-	164	-	-	-	164
Total	-	937	-	-	-	937

ACIAR had no Administered financial liabilities at 30 June 2009.

ACIAR has no derivative financial liabilities in both the current and prior year.

Note 21D: Market Risk

ACIAR holds basic Administered financial instruments that do not expose it to currency, interest rate or other price risk.
Credit terms for both receivables and payables are normally 30 days net.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 22: Appropriations

Table A1: Acquittal of Authority to Draw Cash from the Consolidated Revenue Fund for Ordinary Annual Services Appropriations

Particulars	Administered expenses		Departmental outputs		Total	
	Outcome 1					
	2010	2009	**2010**	2009	**2010**	2009
	$'000	$'000	**$'000**	$'000	**$'000**	$'000
Balance brought forward from previous period *(Appropriation Acts)*	**-**	-	**3,788**	2,651	**3,788**	2,651
Opening balance error adjustment	**-**	-	**-**	546	**-**	546
Appropriation Act:						
Appropriation Act 1 2009-2010 as passed	**53,831**	-	**9,808**	52,333	**63,639**	52,333
Appropriation Act 3 2009-2010 as passed	**250**	-	**-**	-	**250**	-
FMA Act:						
Appropriations to take account of recoverable GST *(FMA Act* section 30A) [1]	**3,949**	-	**216**	3,674	**4,165**	3,674
Relevant agency receipts *(FMA Act* section 31)			**44**	-	**44**	-
Total appropriation available for payments	**58,030**	-	**13,856**	59,204	**71,886**	59,204
Cash payments made during the year (GST	**(57,212)**	-	**(11,292)**	(55,416)	**(68,504)**	(55,416)
Balance of authority to draw cash from the Consolidated Revenue Fund for ordinary annual services appropriations and as represented by:	**818**	-	**25,148**	3,788	**25,966**	3,788
Cash at bank and on hand	**-**	-	**218**	197	**218**	197
Departmental appropriations receivable			**2,306**	2,757	**2,306**	2,757
Undrawn, unlapsed administered appropriations	**789**	-			**789**	-
Net GST payable (to)/from ATO	**921**	-	**40**	834	**961**	834
Net GST payable (to)/from OPA	**(892)**	-	**-**	-	**(892)**	-
Total as at 30 June	**818**	-	**2,564**	3,788	**3,382**	3,788

[1]The amounts in this line item are calculated on an accrual basis to the extent that an expense may have been incurred that includes GST but has not been paid by year-end.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 22: Appropriations - cont.

Table A2: Acquittal of Authority to Draw Cash from the Consolidated Revenue Fund for Ordinary Annual Services Appropriations (Reduction in Administered Items)

Particulars	Administered expenses			
	Outcome 1		Total	
	2010	2009	**2010**	2009
Reduction in administered items				
Total administered items appropriated 2009-2010	**54,081,000.00**	0.00	**54,081,000.00**	0.00
Less administered items required by the agency as per *Appropriation Act section 11*[1]*:*				
Appropriation Act (No. 1) 2009-2010	**53,731,777.07**	0.00	**53,731,777.07**	0.00
Appropriation Act (No. 3) 2009-2010	**250,000.00**	0.00	**250,000.00**	0.00
Total administered items required by the agency as represented by:				
Spent	**53,292,040.05**	0.00	**53,292,040.05**	0.00
Retention	**689,737.02**	0.00	**689,737.02**	0.00
Total reduction in administered items - effective 2010-11	**99,222.93**	0.00	**99,222.93**	0.00

[1]Administered items for 2009-10 were reduced to these amounts when these financial statements were tabled in the Parliament as part of ACIAR's 2009-10 Annual Report. This reduction is effective in 2010-11 and the amounts in the Total reduction row will be reflected in Table A1 in the 2010-11 financial statements in the row 'Appropriations reduced (Appropriation Act sections 10, 11&12)'.

Departmental and non-operating appropriation do not lapse at financial year-end. However, the responsible Minister may decide that part or all of a departmental or non-operating appropriation is not required and request the Finance Minister to reduce that appropriation. The reduction in the appropriation is effected by the Finance Minister's determination and is disallowable by Parliament.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 23: Special Accounts

ACIAR Special Account (Administered)	**2010 $'000**	2009 $'000
Appropriation: *Financial Management and Accountability Act 1997* section 21		
Establishing Instrument: *Australian Centre for International Agricultural Research Act 1982* section 33		
Purpose: For crediting amounts received from time to time to cover the discharge of costs.		
Balance brought forward from previous period	**-**	-
Transfer from ACIAR Special Account (Departmental)	**4,938**	
Other receipts	**39,154**	-
Total increase	**44,092**	-
Payments made to suppliers	**(15,933)**	-
Total decrease	**(15,933)**	-
Balance carried to next period (excluding investment balances) and represented by:	**28,159**	-
Cash held in the Official Public Account	**28,159**	-
Cash held by the agency	**-**	-
Total balance carried to the next period	**28,159**	-

Other receipts include $4.938m transferred in from the ACIAR Special Account (Departmental) when that account was reclassified as Administered effective 1 July 2009.

ACIAR Special Account (Departmental)	**2010 $'000**	2009 $'000
Appropriation: *Financial Management and Accountability Act 1997 section 21*		
Establishing Instrument: *Australian Centre for International Agricultural Research Act 1982 section 33*		
Purpose: For crediting amounts received from time to time to cover the discharge of costs.		
Balance brought forward from previous period	**4,938**	3,476
Other receipts	**-**	17,926
Total increase	**4,938**	21,402
Payments made to suppliers	**-**	(16,464)
Transfer to ACIAR Special Account (Administered)	**(4,938)**	-
Total decrease	**(4,938)**	(16,464)
Balance carried to next period (excluding investment balances) and represented by:	**-**	4,938
Cash held in the Official Public Account	**-**	8,414
Cash held by the agency	**-**	-
Total balance carried to the next period	**-**	4,938

ACIAR has an *Other Trust Monies Special Account*. This account was established under section 20 of the *Financial Management and Accountability Act 1997 (FMA Act)*. For the year ended 30 June 2010 the account had a $nil balance and there were no transactions debited or credited to it.

The purpose of the *Other Trust Monies Special Account* is for expenditure of monies temporarily held on trust or otherwise for the benefit of a person other than the Commonwealth.

Note 24: Compensation and Debt Relief

Departmental

The Agency did not provide any compensation or debt relief during the financial year.

Administered

The Agency did not provide any compensation or debt relief during the financial year.

Note 25: Reporting of Outcomes

Note 25A: Net Cost of Outcome Delivery

	Outcome 1		Total	
	2010	2009	**2010**	2009
	$'000	$'000	**$'000**	$'000
Expenses				
Administered	**69,921**	-	**69,921**	-
Departmental	**9,067**	68,450	**9,067**	68,450
Total	**78,988**	68,450	**78,988**	68,450
Income from non-government sector				
Administered	**(452)**	-	**(452)**	-
Departmental	**(22)**	(12)	**(22)**	(12)
Total	**(474)**	(12)	**(474)**	(12)
Other own-source income				
Administered	**(15,940)**	-	**(15,940)**	-
Departmental	**(36)**	(16,139)	**(36)**	(16,139)
Total	**(15,976)**	(16,139)	**(15,976)**	(16,139)
Net cost of outcome delivery	**62,538**	52,299	**62,538**	52,299

Outcome 1 is described in Note 1.1. Net costs shown include intra-government costs that are eliminated in calculating the actual Budget Outcome.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

Note 25: Reporting of Outcomes - cont.

Note 25B: Major Classes of Departmental Expense, Income, Assets and Liabilities by Outcomes

	Outcome 1		Total	
	2010	2009	**2010**	2009
	$'000	$'000	**$'000**	$'000
Departmental Expenses:				
Employees	**6,229**	5,907	**6,229**	5,907
Suppliers	**2,589**	3,117	**2,589**	3,117
Depreciation and amortisation	**249**	299	**249**	299
Grants	**-**	48,900	**-**	48,900
Other program expenditure	**-**	10,216	**-**	10,216
Other	**-**	11	**-**	11
Total	**9,067**	68,450	**9,067**	68,450
Departmental Income:				
Revenues from Government	**9,808**	52,333	**9,808**	52,333
Sales of goods and services	**22**	12	**22**	12
Other non-taxation revenue	**36**	16,139	**36**	16,139
Total	**9,866**	68,484	**9,866**	68,484
Departmental Assets				
Cash and cash equivalents	**218**	5,135	**218**	5,135
Trade and other receivables	**2,616**	3,776	**2,616**	3,776
Land and buildings	**207**	313	**207**	313
Property, plant and equipment	**249**	236	**249**	236
Intangibles	**91**	126	**91**	126
Other non-financial assets	**74**	228	**74**	228
Total	**3,455**	9,814	**3,455**	9,814
Departmental Liabilities				
Suppliers	**265**	124	**265**	124
Grants	**-**	1,864	**-**	1,864
Other payables	**352**	5,825	**352**	5,825
Employee provisions	**1,295**	1,257	**1,295**	1,257
Total	**1,912**	9,070	**1,912**	9,070

Outcome 1 is described in Note 1.1. Net costs shown include intra-government costs that were eliminated in calculating the actual Budget outcome.

Australian Centre for International Agricultural Research

Notes to and Forming Part of the Financial Statements

for the period ended 30 June 2010

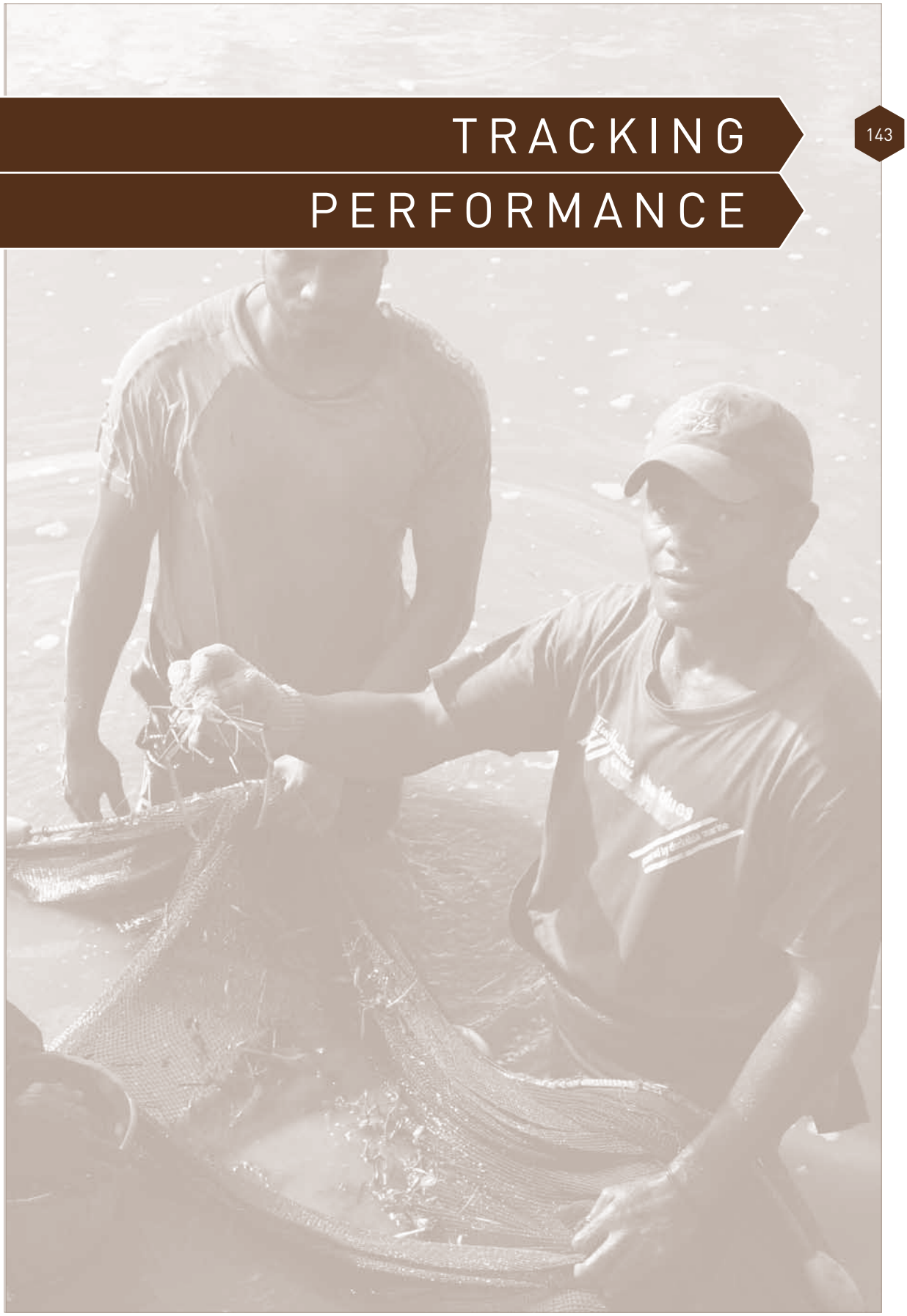
Note 25: Reporting of Outcomes - cont.

Note 25C: Major Classes of Administered Expenses, Income, Assets and Liabilities by Outcomes

	Outcome 1		Total	
	2010	2009	**2010**	2009
	$'000	$'000	**$'000**	$'000
Administered expenses				
Grants	**59,608**	-	**59,608**	-
Other program expenses	**10,313**	-	**10,313**	-
Total	**69,921**	-	**69,921**	-
Administered income				
External funds	**15,940**	-	**15,940**	-
Other revenue	**452**	-	**452**	-
Total	**16,392**	-	**16,392**	-
Administered assets				
Cash and cash equivalents	**28,159**	-	**28,159**	-
Receivables	**1,143**	-	**1,143**	-
Other non-financial assets	**125**	-	**125**	-
Total	**29,427**	-	**29,427**	-
Administered liabilities				
Suppliers	**119**	-	**119**	-
Grants	**654**	-	**654**	-
Other	**29,343**	-	**29,343**	-
Total	**30,116**	-	**30,116**	-

Outcome 1 is described in Note 1.1.

TRACKING PERFORMANCE



TRACKING PERFORMANCE AGAINST THE 2009–10 PORTFOLIO BUDGET STATEMENT

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.

ACIAR has a single outcome: agriculture in developing countries and Australia is more productive and sustainable as a result of better technologies, practices, policies and systems. Under this outcome ACIAR has a single program—International Agricultural Research and Development—delivered through a range of country programs and initiatives. Program objectives are broadly linked to deliverables, with many aligning directly, while key performance indicators and associated performance reflect the overall contribution to the single outcome. Each is presented separately.

Transition from Outputs to Programs Framework

2008–09 Budget year
Outcome 1: Agriculture in developing countries and Australia is more productive and sustainable as a result of better technologies, practices, policies and systems.
Output Group 1.1: Collaborative research that addresses agricultural and natural resource management problems of developing countries and Australia
Departmental Outputs: Program Management Program Support
Output Group 1.2: Trained researchers in developing countries and Australia
Departmental Outputs: Program Management Program Support

2009–10 Budget year
Outcome 1: Agriculture in developing countries and Australia is more productive and sustainable as a result of better technologies, practices, policies and systems.
Program: International Agricultural Research and Development
Administered Items: Program Management
Departmental Outputs: Program Support

Program objective		Deliverable
Safeguarding food security through improving the productivity of rice-based farming systems of South and South-East Asia		Increasing the productivity of rice-based farming systems in selected Mekong and South Asian countries through improved crop rotations and water use, fast-tracking the development of new crop varieties
Delivering key elements of the Overseas Development Assistance – Food Security through Rural Development initiative, which includes a strong focus on Africa		
Climate change adaptation in the rice-based farming systems of selected Mekong and South Asian countries		Undertaking research to underpin adaptation to climate change at the farm level by focusing on more-efficient water use, optimisation of crop choices, seasonal climate forecasting and targeted capacity building
Opportunities for developing high-value agricultural, forestry and fisheries products in Pacific island countries		Confirming and identifying the opportunity for Pacific high-value products on a sound and detailed international market analysis. This includes identifying and developing strategies to address supply-chain constraints; focusing on developing the linkages between farmers, agribusiness and other players; and identifying value-adding opportunities, supported by developing capacity within research and agribusiness organisations in the Pacific region
New programs improving the profitability and market linkages of smallholder mariculture in the Philippines, crop livestock in 'lagging regions' of Vietnam, and vegetable and coffee industries in Papua New Guinea (PNG)		Confirming programs underway targeted at improving the profitability and market linkages of smallholder mariculture in the Philippines, crop and livestock production in 'lagging regions' of Vietnam, and vegetable and coffee industries in PNG
Co-funded collaboration in India on the application of new wheat breeding and selection methods		
Initiatives to restore agricultural productivity in Afghanistan and Iraq		Designing and implementing a program to address and mitigate agricultural impacts of irrigation water salinity in southern Iraq
		As part of a whole-of-government program, contributing to the design and implementation of a second phase of the Smallholder Agribusiness Development Initiative in eastern Indonesia Managing the research and extension component of the Cambodian Agricultural Value Chain program, funded on behalf of the Australian Government through AusAID
A contribution to global agricultural productivity through an increased investment in the Consultative Group for International Agricultural Research (CGIAR)		Investing a significant proportion of funds in new CGIAR-specified mega-programs

2009–10 key performance indicators		2009–10 performance
Biophysical and policy constraints and opportunities for climate adaptation assessed at the farm level, and the efficacy of agrometeorological and extension services in the context of climate change adaptation assessed in Mekong countries and Bangladesh		Constraints to and opportunities for climate adaptation at the farm level were assessed, including the country-specific aspects to climate change adaptation (LWR/2008/015 'Developing options to mainstream climate adaptation into farming systems in Cambodia, Laos, Bangladesh and India' and LWR/2008/019 'Developing multi-scale climate change adaptation strategies for farming communities in Cambodia, Lao PDR, Bangladesh and India').
Technologies developed to enhance smallholder livelihoods from export tree crops and sweetpotato in PNG through increased crop yields, appropriate management of soil and nutrients, and improved postharvest handling and marketing within a sociocultural context that reduces constraints to adoption		Teak seeds of superior Thai germplasm are now being imported for propagation and distribution. Socioeconomic studies by Curtin University are improving understanding of how new technologies of oil palm are taken up, and are designing interventions to overcome impediments. On-farm sweetpotato trials in the PNG highlands have shown that tuber yield could be doubled (15–30 t/ha) through integrated soil, crop residue, water and nutrient management practices. Results are being evaluated for development of management practices most appropriate for local agroecological and socioeconomic conditions and cultural practices.
New market-driven product opportunities (including forestry, fruits, vegetables, flowers, fishery products, nuts, herbs and spices) identified, and R&D projects to address these designed and implemented in at least two Pacific island countries	‹· · ›	Smallholder commercial horticultural growers are evaluating integrated crop management practices—in Fiji (ginger and brassicas), Samoa (brassicas) and Solomon Islands (aubergines, yard-long beans etc.). The Pacific Agribusiness Research for Development Initiative (PARDI; PC/2008/044) is now in the implementation phase; initial opportunities have been identified for black pearls, canarium nuts and, potentially, breadfruit and root crops. R&D projects to address these commenced June 2010.
In Indonesia, new aquaculture planning tools used routinely by national and regional agencies to formulate management strategies		The Coastal Aquaculture Classification Scheme (CACS) was completed and will be formally adopted by the Ministry of Marine Affairs and Fisheries for strategic development of land- and sea-based aquaculture. New planning tools (aquaculture site suitability maps, spatial data, soil maps, mapping models) developed under CACS have been applied by the following agencies: ■ provincial fisheries departments in South Sulawesi and Lampung ■ BAPPEDA (the Provincial Body for Planning and Development) in Lampung and South Sulawesi ■ the province of South Sulawesi and Department of Zoning, Spatial Planning and Settlement ■ Ministry of Marine Affairs and Fisheries in work on the west coast of South Sulawesi ■ Government of Indonesia Shrimp Renaissance Program.

2009–10 key performance indicators		2009–10 performance
Implementation of new agricultural livelihoods program in north-western mountainous provinces of Vietnam		The first project (AGB/2008/002 'Improved market engagement for sustainable upland production systems in the north-western highlands of Vietnam') has been implemented. Researchers have also varied the content of AGB/2006/112, 'Increasing the safe production, promotion and utilisation of indigenous vegetables by women in Vietnam and Australia', to align it with the 'new agricultural livelihoods program in the north-western highland provinces'. A third project (LPS/2008/049 'Overcoming technical and market constraints to the emergence of profitable beef enterprises in the north-western highlands of Vietnam') is in advanced stages of design, with implementation expected in the first half of 2010–11.
Key disease constraints to major fruit (papaya, jackfruit and durian) production and quality, and broader constraints to papaya industry efficiency and profitability identified in the Philippines, through mapping of representative supply chains, and communicated to industry and producers		Disease constraints have been identified for durian, jackfruit and papaya. The key disease constraint for durian and jackfruit was confirmed as *Phytophthora* (several species, of which one may be new). In papaya the key disease constraints are bacterial crown rot (*Erwinia*) and choco spot (*Corynespora cassiicola*). The predominant commercial insect pests are a range of phytophagous mites, spiralling whitefly, fruit flies, mealy bug, scales and snout beetle. The papaya domestic supply chain has been mapped in collaboration with local industry partners.
Activities addressing wheat breeding and linkages to international bioinformatics initiatives implemented as part of the joint Indo–Australian collaborative program on marker-assisted breeding in wheat		Personnel from the Indo–Australian program have been integrated into the initiative for international collaboration for molecular plant breeding hosted by the Generation Challenge Program of the CGIAR system; the Indian bioinformatics specialist for the program has also received data manager's training in Spain.
Productivity gains achieved in horticultural and dairy enterprises in Pakistan leading to higher farmer incomes in selected areas		A sample of mango growers from Vehari, Rahin Yar Khan, Multan, Shujabad and Muzaffargarh districts in Pakistan report increases in yields of greater than 25% and in total returns of 67–97% (off production areas of 30–89 ha) over the previous seasons as a result of the uptake of ASLP best practice technologies. The main practices cited as responsible for the productivity gains by collaborative growers were: ■ tree pruning after harvest, to increase bearing terminals, leading to increased yields ■ adoption of general integrated crop management practices such as nutrient use, pesticide applications and better irrigation timing, resulting in better quality fruits. These practices generally affected tree health and resulted in higher yields and better fruit quality, which increased the orchards' worth in terms of rupees charged to contractors who were willing to pay the increased asking prices.

2009–10 key performance indicators		2009–10 performance
Investment in new CGIAR mega-programs scoped and finalised		During 2009–10 ACIAR has actively participated with donors and other stakeholders in progressing the extensive CGIAR reform program. A range of institutional changes has been implemented covering the establishment of a Fund Council including Australian membership; a Consortium Board and constitution; and a monitoring and evaluation framework. This restructuring progress has included, as key features of the reform agenda, the drafting of a strategy and results framework and a mega-program structure, but further work on these latter issues is necessary to achieve finalisation.

TRACKING PERFORMANCE AGAINST THE 2009–10 ANNUAL OPERATIONAL PLAN

ACIAR's 2009–10 Annual Operational Plan (AOP) outlines research priorities, providing a window into the Centre's operations and research directions within the context and strategies of the Portfolio Budget Statement and the broader Australian aid program.

Key performance indicators in each country

ACIAR measures its progress in each country through a series of 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 outcomes applicable to partner-country needs. In the table below, KPIs are shown in the left-hand column and achievements in the right-hand column.

Papua New Guinea	
Technologies developed to enhance smallholder livelihoods from sweetpotato through increased crop yields, appropriate management of soil and nutrients, and improved postharvest handling and marketing	On-farm sweetpotato trials in the PNG highlands have shown that tuber yield could be doubled (15–30 t/ha) through integrated soil, crop residue, water and nutrient management practices. Results are being evaluated for development of management practices most appropriate for local agroecological and socioeconomic conditions and cultural practices. Sweetpotato planting material of some varieties that were heat-treated to remove virus infection have offered significantly higher yield in field trials than virus-infected material. A workshop in January 2010 identified constraints to participation of women in sweetpotato supply chains, and solutions constraining supply-chain effectiveness. A workshop in June 2010 reviewed issues with sweetpotato quality and their amelioration.
Technology innovation demonstrated for export tree crops that enhance crop yields and improve postharvest handling and marketing within a sociocultural context that reduces constraints to adoption and improves smallholder livelihoods	Socioeconomic studies in progress by Curtin University are improving understanding of how new technologies of oil palm are taken up, and designing interventions to overcome impediments.
New coffee project scoped to assess the socioeconomic constraints to technology adoption and management of the natural resource base	Implementation commenced with a workshop in early February 2010. Sites were chosen and the first work plan developed.
Initiatives commenced to secure and promote the availability of high-quality teak germplasm for smallholder plantings and increased involvement in projects of agroforestry-focused NGOs	A project is underway with the aim of developing a national germplasm distribution system. Teak seeds of superior Thai germplasm are now being imported for propagation and distribution. Many communities are now enthusiastically planting teak. Several NGOs are now involved in forestry projects in PNG, e.g. Village Development Trust; Foundation for People and Community Development; People's Action for Rural Development; Organisation for Industrial, Spiritual and Cultural Advancement; Pacific Projects.

Papua New Guinea continued	
Strategic approach developed to guide the expansion of inland aquaculture in PNG, and quantities and reliable availability of high-quality fingerlings significantly improved	A new large ACIAR project has commenced following extensive consultation to better coordinate inland aquaculture development. Improved coordination is being achieved through a newly formed national committee on aquaculture extension and development. Greater supply of fingerlings has resulted from expansion in several small, localised hatcheries, but expansion and better management of the government hatchery are still required.
Direct linkages established between at least three AusAID-funded ARDSF projects, at least three Unitech scholarship projects and ACIAR research output	Five Unitech postgraduate scholarships were awarded in 2010, each with some alignment with current ACIAR work.
Pacific island countries	
Integrated production management packages (for ginger, leafy vegetables, brassicas and papaya) tested commercially in at least three countries	Smallholder commercial horticultural growers are evaluating integrated crop management practices in Fiji (ginger and brassicas), Samoa (brassicas) and Solomon Islands (aubergines, yard-long beans etc.).
Promising processing technologies identified, developed and communicated for forest products and indigenous nut crops	Promising composites involving coconut wood have been identified. Workshops have been held to disseminate the significant advances made in relation to the processing of canarium nuts.
New market-driven product opportunities (including forestry, fruits, vegetables, flowers, fishery products, nuts, herbs and spices) identified and R&D projects to address these designed and implemented in at least two countries	The Pacific Agribusiness Research for Development Initiative (PARDI – PC/2008/044) is now in the implementation phase; initial opportunities have been identified for black pearls, canarium nuts and, potentially, breadfruit and root crops. R&D projects to address these commenced June 2010.
Research strategy to strengthen agribusiness linkages for sustainable domestic and/or export market development identified for four products	Research strategies to strengthen agribusiness linkages for sustainable domestic and/or export market development have been identified through initial work conducted by PARDI (PC/2008/044). Black pearls, canarium, breadfruit and root crops are initial candidate commodities.
Productivity and profitability of smallholder aquaculture significantly improved in at least two countries through introduction of new culture technologies, identification of better performing broodstock and development of nutritious low-cost feeds	Improved production techniques for mabe (half-pearls) have been developed, resulting in improved profitability for the industry in Tonga. Tilapia culture techniques have been improved and effective low-cost feeds developed in Fiji. Work continues to identify better performing stocks of freshwater prawns, as the initiation of the project was delayed by 1 year due to logistical and environmental problems in Fiji.

Indonesia	
Lessons learned from 'pilot rollouts' of research activities integrated into Balai Pengkajiaan Teknologi Pertanian (Assessment Institute for Agricultural Technology) and SADI programs, and design and implementation of the ACIAR-managed component of a second phase of SADI completed	Lessons from pilot rollouts (PROs) were evaluated with key partners and documented in a workshop in Bali in April 2010. The issuing of a memorandum by the Indonesian Centre for Agricultural Technology Assessment and Development (ICATAD) to adopt PROs as a mainstream approach for technology assessment and to scale-out the model to all 33 provinces demonstrates the extent of support. ICATAD has agreed to provide operational funds in 2010 and 2011 to complete the testing and development of the PRO approach. ACIAR–SADI is supporting this by extending the mentoring support from University of Queensland for 2 years after the completion of SADI. The follow-on program for SADI is in design under the management of AusAID. It is still unclear whether there will be a role for ACIAR in this new program.
Indonesian partners scaled-out institutional development strategies for improved relevance and delivery of agricultural research	ICATAD is implementing a nationwide scale-out of Collaborative Competitive Research Grants (CCRG) that were piloted in four provinces with ACIAR support. In 2011 all research grants to the Assessment Institutes of Agricultural Technology in all 33 provinces will follow the principles successfully piloted in CCRG. This will be supported by the additional nationwide scale-out of outcomes-based monitoring and evaluation (also piloted with ACIAR support). ACIAR is assisting both scale-out agendas through continued mentoring and the development of an online monitoring database facility. ICATAD also intends to scale-out PRO nationwide once the pilot activity is completed.
Factors affecting competitiveness of key domestic and international high-value products, including mango, mangosteen, chilli, shallots and shrimp analysed	A project is continuing to analyse value-chain development, associated demand patterns and farmer participation.
Improvements in production, pest and disease management, quality and marketability for banana, citrus, mango and mangosteen trialled by industry and farmers	Industry and farmer trialling of new approaches to production, marketing and pest management of banana, citrus, mango and mangosteen is happening through four projects in Indonesia and Australia.
Effective biosecurity procedures to protect individual enterprises from avian influenza tested in collaboration with the small-scale commercial poultry sector	Researchers have worked with stakeholders in this sector to identify appropriate biosecurity measures that they are now in the process of evaluating.
Teak timber processing strategies disseminated to companies in central Java to reduce wood losses in furniture production	Detailed reports have been prepared for each of the 15 industry 'champions' involved in the project. For each of these companies, detailed recommendations have been compiled to improve their standards, in addition to more generic recommendations for the industry. These reports were distributed to all participants in August 2010.
Smallholder culture of spiny lobster placed on sounder technical and economic footing through transfer and adaptation of capture and grow-out technologies	Progress has been achieved through a project that is adapting lobster farming technologies developed in Vietnam and applying them to Indonesia at the village level.

Indonesia continued	
New planning tools for land- and sea-based aquaculture routinely applied by relevant national and regional agencies in formulation of aquaculture planning and policy advice to management decision-making bodies	The Coastal Aquaculture Classification Scheme (CACS) has been completed and will be formally adopted by the Ministry of Marine Affairs and Fisheries for strategic development of land- and sea-based aquaculture. New planning tools (aquaculture site suitability maps, spatial data, soil maps, mapping models) developed under CACS have been applied by the following agencies in extension support and restoration projects across Indonesia: ■ provincial fisheries departments in South Sulawesi and Lampung ■ BAPPEDA (the Provincial Body for Planning and Development) in Lampung and South Sulawesi ■ the province of South Sulawesi and Department of Zoning, Spatial Planning and Settlement ■ Ministry of Marine Affairs and Fisheries in work on the west coast of South Sulawesi ■ Government of Indonesia Shrimp Renaissance Program.
Extension by farmer groups of shrimp production packages enhanced to address production consistency and product quality	By the end of a project to assist smallholder shrimp farmers, more than 200 have adopted better management practice programs within a framework of committed, local catchment-based farmer groups with the support of active, well-trained and resourced extension services. These farmers consistently produce high-quality shrimp that attract premium prices.
Constraints and opportunities to profitable and resilient farming systems in Aceh assessed, and appropriate technologies identified for on-farm testing	Results emerging from past projects have been used to develop a range of promising technologies that will increase cost-effective production in rice-based cropping systems. These technologies are being tested at seven permanent experimental and demonstration sites in Aceh through a new project.
Vietnam	
The first two projects of a new agricultural livelihoods program in the north-western highland provinces implemented	The project on improving market engagement for sustainable upland production systems has been implemented. Researchers have varied the content of the project on increasing the safe production, promotion and utilisation of indigenous vegetables by women to align it with the new agricultural livelihoods program in the north-western highland provinces. A third project on overcoming technical and market constraints to the emergence of profitable beef enterprises is in advanced stages of design, with implementation expected in the first half of 2010–11.
Cost-effective and environmentally friendly aquaculture feeds introduced for a wider range of species, backed by economic analysis	Almost complete adoption has been achieved of formulated feeds by the catfish industry, resulting in greatly reduced use (many tens of thousands of tonnes) of low-value fish as a fish feed, releasing those low-value fish for human consumption. A major new project has been established to coordinate aquaculture nutrition research in Vietnam, especially in developing improved diets for marine finfish and crustaceans.
Technologies developed for fast-growing forest plantations for high and sustainable productivity, particularly on degraded soils	A project that has established relationships between silvicultural management in eucalypt plantations and the problems related to growth stress that frequently arise when young eucalypts are used for the production of sawn timber is now complete. Another project is well underway in which trials have been established in northern, central and southern Vietnam to examine impacts of silviculture on productivity and sustainability of acacia plantations. These results are now leading to silvicultural guidelines for the production of acacia sawlogs.

Vietnam continued	
Production and management practices developed for two indigenous vegetables and two temperate fruit species based on regional/market comparative advantage in northern Vietnam	Researchers have developed improved production and management practices for 10 indigenous vegetables, and better management and production of high-quality stone fruit and persimmons is realising benefits. The development of these practices has led to improved market competitiveness of high-value agricultural products from northern Vietnam.
Management practices developed for sustainable and profitable farming systems best suited to local conditions in south-central coastal Vietnam	A multidisciplinary project involving integrated crop and beef cattle production and marketing is progressing well, leading to field investigations that will identify and develop management practices for sustainable and profitable crop and livestock systems for south-central coastal Vietnam.
Philippines	
Key disease constraints to major fruit (papaya, jackfruit and durian) production and quality, and broader constraints to papaya industry efficiency and profitability, identified through mapping of representative supply chains, with results communicated to industry and producers	Key disease constraints (*Phytophthora*—several species, of which one may be new) have been identified for durian and jackfruit. In papaya the key disease constraints are bacterial crown rot (*Erwinia*) and choco spot (*Corynespora cassiicola*), while the predominant commercial insect pests are a range of phytophagous mites, spiralling whitefly, fruit flies, mealy bug, scales and snout beetle. The papaya domestic supply chain has been mapped in collaboration with local industry partners.
Economic assessment and initial farmer evaluation of cost-effective protected vegetable cropping system in Leyte completed	All of nine protected cropping structures (differing designs and locations) are now delivering positive gross margins that are higher than open field production, especially on farmer sites. Private partners are currently erecting a further 19 structures using component designs. Key observations from the results of the analysis indicated the following: ■ Gross margins for the 'control' are negative in three of the four cases, indicating that growing crops without protection in the given environment is not feasible. ■ The igloo structures at Visayas State University (VSU) had higher gross margins than the house type (even though they are much smaller and cheaper). ■ Farmers' gross margins were higher for crops grown under house type protective structures at farmer sites than at the VSU site. In the first to third croppings the Cabintan and Maasin sites showed overall gross margins of P29,703 and P3,122, respectively, for the protected cropping. Despite the second crop failure, the high 1-year gross margin in Cabintan was indicative of the viability of the protected cropping system over the long-term period.
Integrated strategies for management of bacterial wilt in potato developed through assessment of more-resistant varieties, expansion of existing certified seed program and refinement of biofumigation technology	More-resistant varieties are still being assessed. Many farmers have adopted biofumigation and the process is being refined through farmer feedback. The existing seed certification system has not been expanded but a review is underway to try and identify how to accomplish expansion.
Current soil fertility status and management practices in vegetable crops in the southern Philippines evaluated, and promising integrated soil and crop nutrient management practices identified for field testing	Scientists analysed 100 soil samples and 300 plant tissue samples for nutrient levels across five replicated trial sites in the southern Philippines. These five sites tested various alternative fertiliser regimes compared with standard farmer practices, and results showed that farmers are not selecting the most cost-effective method of nutrient application for a range of vegetable crops.

Philippines continued	
Economic potential for sea-ranching of sea cucumber evaluated at multiple sites	Data collection on critical biological and economic components of sea-ranching at four sites in the Philippines have been used to develop a bioeconomic model for a range of production alternatives. Project partners at a recent workshop in Manila tested the model and it is now receiving modifications that will add significantly to its utility and applicability. Principal among the modifications is the incorporation of a range of risk scenarios.
Soil conservation and water management improvements implemented at the farm scale in corn–cassava cropping areas of the two watersheds in Bohol Island, Visayas	Field investigations of two watersheds on Bohol Island (Inabanga and Abatan) have identified promising soil conservation and water management practices for increasing the productivity of corn–cassava-based cropping systems and sustaining soil fertility.
Capacity of Philippine Weather Bureau improved to develop and deliver seasonal climate forecasts for Philippine farmers, and potential economic value for farmers determined	The Philippine Weather Bureau capacity has been improved through participation in workshops, conference presentations and project implementation. Case studies demonstrated potential economic value (+/–) for farmers in growing rice or maize.
East Timor	
Continuing evidence provided of farmers selling into commercial markets their surplus production of varieties of a range of crops selected and disseminated under the 'Seeds of Life 2' project	The number of farmers who use 'Seeds of Life' varieties and sell small surpluses is increasing for the first time, especially with sweetpotato and peanut. Cash generated is commonly spent on children's education.
One research station completely rehabilitated and two others underway	The new planned facilities at Betano are fully operational. Buildings are complete at Loes, and development of facilities for upland research is ongoing at Aileu.
Detailed analysis conducted and published of research needs and opportunities for improved productivity in East Timor livestock production systems	Researchers conducted an analysis to define the directions of a livestock research program in East Timor, and results were published at the end of June 2010.
Cambodia	
At least three CAVAC-program-defined research initiatives established to address critical constraints in rice-based farming systems in Takeo, Kampot and Kampong Thom provinces	A research initiative on water management issues in target provinces has been established, and two new research projects on improvements in rice establishment and productivity are operational. A project on improved irrigation water management to increase crop productivity in Cambodia has been through development Phase 1 and is currently under Phase 2 development for implementation during 2010–11.
Initial farmer field schools established under CAVAC in three provinces, with farmers trained and improved knowledge and skills applied, resulting in improved rice and vegetable productivity, market linkages and incomes	Farmer field schools were established for training and improving knowledge in increasing vegetable productivity, and similar schools on rice establishment and productivity will be a feature of a new project.

Cambodia continued	
Significant increase in cattle production demonstrated in at least 100 households that have adopted recommended systems for improved feeding, management and health in areas where cattle feed is severely limited by flooding during the rainy season	The number of adopting farmers exceeds 200, through the efforts of two ongoing projects on improving feeding systems for more-efficient beef cattle production in Cambodia and best practice health and husbandry of cattle.
Disease surveys completed to determine the occurrence and economic importance of bacterial wilt in vegetables in Kandal province, and a manual developed to allow staff to perform disease diagnostic tests	In order to provide training in the identification of bacterial wilt symptoms and its cause, three surveys were conducted within Kandal province in 2008. Although the disease was not identified, continued monitoring within the province and the widening of surveys to other production areas was recommended. A simple and effective identification system was successfully implemented, using the procedures of a laboratory manual and associated protocols to independently isolate and identify disease in plants and vegetables. Pathogenicity tests were also undertaken to show due cause. These results allowed appropriate management advice for control and prevention of further infection.
Biophysical and policy constraints to and opportunities for climate adaptation assessed at the farm level, and efficacy of agrometeorological and extension services in the context of climate change adaptation in Cambodia assessed	Constraints to and opportunities for climate adaptation at the farm level were assessed, including the country-specific aspects to climate change adaptation, and documented in the final project report of LWR/2008/015. The efficacy of agrometeorological and extension services in the context of climate change adaptation in Cambodia has been assessed in a small research activity, and plans have been made in a national workshop for the assessment at farm level of biophysical and policy constraints to, and opportunities for adaptation once the main project is operational.
Lao PDR	
A range of direct-seeding options for rice by Lao farmers evaluated, and simple methods for seeding developed for irrigated conditions	A project has evaluated direct-seeding options for rice. Among the simple options put forward, broadcasting is preferred by farmers because of labour saving where weeds are not a problem; where weeds are an issue, row planting to facilitate weeding is a better choice.
Improved timber processing, drying and manufacturing procedures, backed up by detailed quality-control manuals, adopted by industry cluster of Lao timber processing and furniture manufacturing companies	Detailed plans for the improvement of operations of the participating processing and furniture manufacturing companies have been provided to members of the industry cluster. These manuals are specifically tailored for each of the companies. The project partners (Melbourne University and National University of Laos) are now assisting with implementation of the improvements.
Prevalence, distribution and socioeconomic impacts of pig-associated zoonoses established for Laos, and appropriate and sustainable village-level disease control strategies identified	The prevalence and distribution studies have been completed, impact studies are being implemented and options for control strategies have been identified.
Constraints and opportunities for climate adaptation assessed at the farm level, and efficacy of agrometeorological and extension services in the context of climate change adaptation assessed	Constraints and opportunities to climate adaptation at the farm level have been assessed including the country-specific aspects to climate change adaptation.

Lao PDR continued	
Thai collaboration achieved on rice technologies and in management of riverine fisheries benefiting Laos–ACIAR projects	Thai researchers have been actively engaged in all aspects of a project that has led to development of guidelines for fish passage facilities at low-head weirs controlling water flow on flood plains.
Thailand	
Faster cattle-fattening rates obtained by participating farmers through increased production of improved forage varieties and production of forages on non-cropping land	Farmers from seven villages in Mahasarakham province are participating in a range of trials in production of improved forage varieties and use of forages as supplements to rice straw, and their effects on cattle-fattening rates. The results from these different feeding regimes on animal performances are being evaluated.
Transfer of knowledge and experience from Thai counterparts achieved, enhancing joint Lao–Thai–Australian efforts to develop fish passage criteria for floodplain species of central Laos	Thai fisheries scientists brought their knowledge of the design and operation of fish passage facilities to a project in Laos, which resulted in the development of guidelines for fish passage facilities at low-head weirs controlling water flow on flood plains.
Joint Lao–Thai–Australian cooperation achieved, increasing knowledge and skills on rice-based lowland cropping systems in Laos	There has been two-way exchange related to rice varietal development and direct seeding. In particular, one senior scientist from Thailand has made a major contribution to the project and the National Agriculture and Forestry Research Institute through training and mentoring on participatory varietal selection methods for rice.
Burma	
If the international situation permits, a targeted program of new multilateral research projects that address key nutrition and food security issues initiated	Based on the achievements of an ongoing project on increasing food security and farmer livelihoods through enhanced legume cultivation in the central dry zone of Burma, concept notes have been developed for new multilateral projects. Discussions are in progress with relevant AusAID and Department of Foreign Affairs and Trade colleagues, and approval is awaited for funds to initiate the work.
India	
Linkages to international bioinformatics initiatives implemented as part of the joint Indo–Australian collaborative program on marker-assisted breeding in wheat	Personnel from the Indo–Australian program have been integrated into the initiative for international collaboration for molecular plant breeding hosted by the Generation Challenge Program of the CGIAR system. The Indian bioinformatics specialist for the program has also received data manager's training in Spain.
Introgression of genes conferring 'stay-green' characteristics into elite sorghum germplasm implemented	'Stay-green', identified in a low-yielding sorghum type called 'pineapple top', has been genetically mapped and moved into ICRISAT's best sorghums, using DNA markers that will increasingly be deployed internationally in breeding for the stay-green trait.
Use of improved technologies demonstrated for crop establishment and production in the rice–wheat and rice-based farming systems of north-western and eastern India	A project has screened rice varieties and assessed direct-seeding methods for rice (showing improved yield for direct-seeded rice (DSR) compared with transplanted rice) as well as evaluated efficacy of herbicides for DSR in rice–wheat systems in India's north-west (Punjab) and east (Bihar).
Activities addressing climate change management and climate adaptation integrated into the water productivity program in Andhra Pradesh	Indian and Australian scientists held a workshop to plan climate change adaptation research activities, which they integrated with the activities of other projects in the water management cluster in Andhra Pradesh.

India continued	
Enhanced understanding achieved of policy and institutional arrangements, community-based water harvesting and impacts of watershed development on equity of water use in central India	In Andhra Pradesh, central India, the cluster of ACIAR projects has developed a better understanding of policy and institutional arrangements for watershed development. The projects made excellent collaborative progress and are on track.
Identified competition policy options to facilitate regulatory and market reform in the agricultural sector addressed through communication of analytical studies	A major study on facilitating efficient agricultural markets in India advanced in 2009–10 through an effective collaboration between Australian and Indian institutions. An important high-level food security workshop involving both Australian and Indian policy analysts and advisers was completed in November 2009, and addressed the role of the market and state in achieving food security, and the scope for regulatory and competition policy reform.
Pakistan	
Productivity gains achieved in horticultural and dairy enterprises, leading to higher farmer incomes in selected areas	A sample of mango growers in Pakistan reported increases in yield of greater than 25% and in total returns of 67–97% (off production areas of 30–89 ha) over the previous seasons, as a result of the uptake of Australia–Pakistan Agriculture Sector Linkages Program (ASLP) best practice technologies (pruning after harvest and integrated crop management). Implementation (for dairy) of an extension program focused on improving feed and water provision in central and western Punjab has resulted in modest gains in productivity. A new dairy research component of ASLP is being designed to increase the extent and scale of these outcomes.
Higher export volumes and revenues achieved through improved quality of mangoes	A survey of Pakistan wholesalers and exporters has shown that, as a result of improved quality (resulting from ASLP interventions), export volume has increased by 30–35% and fruit price has appreciated by 20–30%. Sea shipments in 2009 compared with 2007 showed a marked improvement in quality. The industry is now receiving signals from markets (wholesalers and exporters) that these standards are what they want to achieve and that such improvements have a positive effect on price received.
New generation resource-conserving technologies and conservation tillage machinery increasingly adopted through the support of Pakistan Government programs	In 2007 the Pakistan Government implemented the National Project to Stimulate Adoption of Permanent Raised Beds. This US$7 million, 5-year program is providing farmers with subsidies to acquire machinery for zero tillage, bed forming and planting. The establishment of this program is a direct outcome of ACIAR's work on permanent raised beds in North West Frontier province.
Bangladesh	
Program broadened to include a suite of new linked activities aimed at increasing production of rice-based cropping systems, including climate adaptation work to safeguard future food security	Previous research on legumes is now focused on the intensification of the rice-based system, specifically through short-duration legumes and relay-sowing of legumes before harvesting rice. Intense adaptive research on rice–maize is also in progress. Such rotations will expand the 'toolbox' of cropping options that are now being systematically investigated in the context of increased buffering capacity of farming systems to withstand climatic challenges.
Winter (Rabi) season cropping increasingly adopted using residual soil moisture or supplementary irrigation in traditional rice–fallow regions	A project on expanding the area for Rabi-season cropping in southern Bangladesh was extremely successful. The success of the project was recognised by the Minister for Agriculture and the Bangladesh Agricultural Research Council.

Bhutan, Afghanistan and Iraq	
Control measures for fruit fly and psyllid insect vector of citrus greening disease tested under commercial orchard conditions in Bhutan	In 2009 preliminary phytotoxicity trials to control fruit flies and citrus psyllids were conducted on mandarins using horticultural mineral oils under Bhutanese commercial growing conditions. The trials demonstrated that there were no apparent negative effects on the mandarin trees. Trial protocols, to be undertaken later in 2010, for the use of horticultural mineral oils against the major citrus pest (Chinese citrus fruit fly) should lead to the development of alternatives to the current control measures, which rely on the use of the synthetic pyrethroid, cypermethrin, and the organophosphate, dimethoate. Trials are currently underway in Bhutan to assess both the phytotoxicity and efficacy of sulfur against powdery mildew at a number of topographically different locations, to give growers an ability to manage this disease and introduce a regular pruning program for citrus orchards.
New maize varieties arising from ACIAR-managed research made available to Afghani farmers	Two tonnes of basic seed of an open-pollinated maize line, Rampur 9433, were distributed to Afghani farmers before the 2010 cropping season.
Conservation cropping practices demonstrated to farmer groups in northern Iraq	Zero tillage is now practiced commercially on 500 ha by Iraqi farmers and is supported by 20 on-farm demonstrations.
China	
Understanding by Chinese partners of opportunities and challenges from World Trade Organization (WTO) accession and associated farm adjustment prospects improved	Previous ACIAR joint project results arising from a project on achieving food security in China have been published and widely distributed in conjunction with the China Centre for Economic Research and the Centre for Chinese Agricultural Research. These results were presented to Chinese policymakers and analysts to inform policy options for the future.
Joint analysis undertaken to assess the viability of alternative frameworks for global agricultural trade negotiations	A final report was produced and presented at relevant workshops and conferences with a creative alternative approach to future trade negotiations involving 'critical mass' principles. The general view is that, while more-efficient and effective agricultural negotiations are required in the WTO, this is likely not to be included in the Doha Round but, prospectively, introduced in agricultural negotiations in the future.
Understanding of wheat-breeding potential to address dryland wheat production and related conservation farming systems in north-western China improved	Chinese scientists have new skills to screen for transpiration efficiency, coleoptile length, dwarfing-gene status, early vigour and root growth characteristics. This complex of traits is important for more-effective use of water by rainfed wheat and for shaping wheat varieties for systems incorporating reduced tillage.
Southern and eastern Africa	
An initiative commenced to foster beef market chains through development of branded beef products based on indigenous cattle	Development of the new initiative depended on the findings of a study 'Beef palatability in the Republic of South Africa: implications for niche-marketing strategies'. This study experienced logistical problems that delayed completion until early 2010, but the report has now been finalised and published (ACIAR Technical Report 72) and the new initiative is under design, to commence in the first half of 2010–11.
Extension of legume crop–livestock technologies and management systems demonstrated, to achieve improved sustainability and profitability for small-scale emerging farms	23 experimental demonstrations were sown at 8 communities and on 3 experimental farms in March 2010. An additional 15 ha were established to a legume mix at Dudamashe to complement the 10-ha sowing of 2009. Two new communities joined the program in 2010. A suite of legumes proved adapted to grazing systems on eroded arable lands, with several species broadly adapted across the former Transkei and Ciskei. As a result, the Eastern Cape Communal Arable Lands project plans to release cultivars of *Lotononis bainesii* and *Lespedeza subsericium* specifically for the Eastern Cape.

Southern and eastern Africa continued	
Studies commenced on improved maize varieties, and systems developed in targeted southern and eastern African countries suitable for use by small farmer groups in semi-arid zones to achieve enhanced yield, drought and pest/disease resistance	Under a project on sustainable intensification of maize–legume cropping systems for food security in eastern and southern Africa (SIMLESA), participatory diagnoses have commenced of maize–legume farming and value-chain systems in five targeted countries with the participation of small farmers, extension agents, researchers and agribusinesses. The aim is to increase yields and reduce yield losses from climatic, biotic and other constraints.
Progress shown in adoption of improved soil management systems and crop diversification to enhance nutritional security in southern and eastern African countries	Under SIMLESA progress has been made in three countries in East Africa. In five maize–legume farming systems exploratory trials and demonstrations on farmers' fields have enabled testing and demonstration of best-bet improved maize and legume varieties and crop systems management technologies selected in cooperation with farmers and farmer groups.

Key performance indicators in research programs

Multilateral program	
According to a CGIAR decision, changes during transition scrutinised and implemented to ensure they pass the following six tests: ■ clear strategic focus ■ increase in research output, outcome and impact ■ greater efficiency, effectiveness and relevance ■ simplicity and clarity of governance ■ enhanced decentralised decision-making ■ active subsidiarity to capitalise on complementarities of the centres	During 2009–10 ACIAR actively participated with donors and other stakeholders in progressing the extensive CGIAR reform program. A range of institutional changes were implemented covering the establishment of a Fund Council including Australian membership; a Consortium Board and constitution; and a monitoring and evaluation framework. This restructuring progress included, as key features of the reform agenda, the drafting of a strategy and results framework and a mega-program structure, but further work on these latter issues is necessary to achieve finalisation.
Building research capacity	
At least 80% of ACIAR-managed postgraduate students studying in Australia successfully completed their awards within the originally planned time frame	80% of ACIAR-managed postgraduate students successfully completed their awards within the originally planned time frame.
At least 75% of postgraduate students in the ACIAR – PNG University of Technology and ACIAR – University of the South Pacific programs successfully completed fieldwork assignments related to their studies	Over 80% of postgraduate students in the ACIAR – PNG University of Technology and 50% involved with ACIAR – University of the South Pacific (USP) programs successfully completed fieldwork assignments related to their studies.
Targeted research management training programs designed and carried out in Australia for at least eight John Dillon Fellowship awardees	Nine John Dillon Fellowship awardees received research management training in Australia.

Communicating research	
Information on program and project achievements and impacts made widely available in print and web-based media	New information available through the ACIAR website in 2009–10 includes: ■ 50 final reports ■ project annual reports and outcomes summaries for recently concluded projects ■ 8 electronic country profiles for major partner countries and regions. Five of the top 10 most visited pages on the ACIAR website relate to ACIAR publications, media and current issues, outlining project and program outputs and achievements. ACIAR's scientific publications published: ■ 15 scientific and extension publications ■ 5 independent impact assessment reports and an annual publication detailing adoption of outcomes from projects completed 3–4 years earlier ■ 2 editions of *Partners in Research for Development* magazine.
Evidence made available of continuing demand for and appreciation of ACIAR's scientific and corporate publications	Publications are the mostly highly searched-for category of information on the website, comprising 34% of total searches. Approximately 1 million PDF files—most of which were full or part publications—were downloaded from the website. A total of 356,113 unique visitors viewed the ACIAR website, with an average of 83,000 viewings of PDFs of ACIAR publications each month. 18,533 hard copies of ACIAR publications were disseminated.
Targeted stakeholder groups satisfied that their information needs are being effectively met	A survey of the ACIAR website conducted during March–April 2010 found that most seekers of information on the website either fully or partially found the information they were seeking. ACIAR's Annual Operational Plan was distributed to 1,400-plus stakeholders across Australia and in partner countries, with additional copies provided to ACIAR Country Offices for dissemination.
ACIAR's use of information and communication methods and technologies for disseminating agricultural research information for development made consistent with current best practice	ACIAR has upgraded its website content management system, which will enable the website to meet Australian Government best practice guidelines on web accessibility and Gov2.0 initiatives for making information accessible. Project websites based on Web2.0 technology continue to be supported and developed to help meet project information needs. Trials of technologies such as 'e-mag' and 'twitter' have been carried out. A new information architecture for the website has been designed and will be implemented early in the 2010–11 financial year.

Measuring research impacts	
At least five impact assessment studies of completed projects published in 2009–10	Five Impact Assessment Series (IAS) studies were published during 2009–10 and a further two were completed and are to be published in early 2010–11.
Impact assessment of at least one thematic area in Indonesia completed	Two thematic impact assessments were completed. The assessment of ACIAR's investment in research on forages in Indonesia was published, while that in plantation forestry in Indonesia will be published in 2010–11.
Impact assessment of at least one thematic area in Papua New Guinea (PNG) completed	An impact assessment on the biology, socioeconomics and management of the barramundi fishery in PNG's Western province was completed and published.
Impact of International Agricultural Research Centre (IARC) activities in ACIAR's mandate region assessed	An analysis of studies reporting the returns to investment in the CGIAR, focusing on the ACIAR mandate regions, was completed and published.
Project leader adoption studies of selected projects published	Adoption studies were undertaken for eight projects and the reports were published.
Links established with partner-country, IARC and Australian impact assessment groups	Numerous links were made with impact assessment groups in Australia and partner countries. The international links largely focused on capacity building. Examples include the IRRI–ACIAR impact assessment training workshop with 18 participants from South Asia, South-East Asia, China and PNG; and assisting IRRI social scientists to undertake impact assessments of IRRI research. In addition, ACIAR's Impact Assessment program reviewed 13 CGIAR impact assessments. In Australia ACIAR provided significant input into the strategic review into rural development conducted by the Office of Development Effectiveness (ODE), and participated in a multistakeholder meeting on impact evaluation. Evaluation specialists from 16 organisations and federal and state government, research and development corporations, universities attended the evaluation meeting.

Key performance indicators for portfolio management

Key performance indicators	Performance 2009–10
Support the new ACIAR CEO in his first year of engagement	Support for CEO was provided, including incoming CEO brief and development of other briefing materials, as well as support for appearances in major forums; Ministerial, portfolio and interdepartmental liaison; and travel to partner countries.
Ensure departmental costs do not increase in real terms	Running costs (departmental) decreased from $9.305 million in 2008–09 to $9.067 million in 2009–10.
Ensure all legislative and reporting requirements and requests for policy advice and information are met in an efficient and timely manner	ACIAR's 2008–09 Annual Report was tabled before the deadline of 31 October 2009. ACIAR's Portfolio Budget Statement, contribution to the Ministerial Aid Statement and required reports to the Privacy Commissioner, the Senate on contracts, the copyright agency and other Commonwealth agencies were all provided in a timely manner. Ministerial briefs, submissions and information requests were all provided within agreed time frames, and Questions on Notice were answered in a timely fashion.
Ensure our corporate knowledge and information is readily accessible to all staff	Project-related reporting and documentation is readily available through ACIAR's record management system and its project information system, supported by corporate information being made available through the intranet and records system.
Reduce our annual electricity consumption below 200,000 kilowatt hours (kh)	Annual electricity consumption was 201,630 kh, slightly above the target set. This is a saving of more than 5,300 kh compared with the 2008–09 financial year. The figure for 2009–10 represents the threshold at which additional savings could only be accrued through changes to air conditioning, lighting and power, which would impact on the working environment in a negative manner.

Portfolio management

AOP budgeted expenditure in 2009–10	$3,505,500
Executive and advisory expenditure in 2009–10	$382,044
Corporate support expenditure in 2009–10	$2,456,454
Proportion of total ACIAR expenditure 2009–10	3.5%

REPORTING AGAINST OTHER STATUTORY REQUIREMENTS

MANAGEMENT OF HUMAN RESOURCES

Snapshot of ACIAR staff as at 30 June 2010

Staff employed under the *Public Service Act 1999*[a]	49[b] (FTE[c] 46.52)
Median length of APS service	6.3 years
Median age	50 years
Women as % of total	67.3%
NESB[d] staff as % of total	8.2%
Part-time staff as % of total	24.5%
Non-ongoing staff as % of total	36.7%
Employee turnover for 2009–10	14.2%

[a] see also Appendix 5
[b] excludes CEO and two inoperative employees
[c] FTE = full-time equivalent
[d] NESB = non-English-speaking background

ACIAR 4-year perspective

Staff employed under the Public Service Act 1999

	2006–07	2007–08	2008–09	2009–10
Staff at 30 June	48	44	47	49
Staff (FTE)	43.84	40.55	43.84	46.52
Base salaries	$3,579,420	$3,628,500	$3,892,196	$4,227,052
Cessations	13	17	8	7
Staff turnover	25.3%	33.9%	17.2%	14.2%
Women	54.2%	61.4%	60%	67.3%
Part-time	20.8%	22.7%	22.2%	24.5%
Non-ongoing	33.3%	36.4%	37.8%	36.7%
Learning and development activities	$60,507	$59,489	$24,561	$47,752

Overseas staff

	2006–07	2007–08	2008–09	2009–10
Staff (FTE)	20.5	20.5	19.5	18.5
Base salaries	$664,683	$690,678	$837,659	$567,000
Learning and development activities	$6,147	$17,257	$2,130	$2,952

Performance management

The ACIAR performance management scheme encourages high achievement by improving individual performance through development, evaluation and planning to meet individual and ACIAR needs.

The 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, providing they are not already on top of a salary range. In the cycle concluded in June 2010 there were 48 completed assessments and all were rated as 'meets expectations' or higher. Of these, 11 were advanced one salary point.

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 2010, received a bonus of $2,000 in recognition of ACIAR's achievements against the 2009–10 Annual Operational Plan. Part-time employees received a pro-rata payment based on hours worked. Forty-five employees received the performance bonus, with payments totaling $80,670.

Learning and development

In 2009–10 ACIAR spent $47,752 on training and development for its Canberra-based employees. This expenditure does not include attendance of Research Program Managers at professional conferences and seminars in Australia and overseas. ACIAR offers generous assistance for formal study, and in 2009–10 three employees received study assistance.

Occupational health and safety

There were no accidents or dangerous occurrences giving rise to issue of any formal notices or directions under the *OHS (Commonwealth Employment) Act 1991.*

ACIAR provides access to an Employee Assistance Program that provides free professional counselling and career planning services to ACIAR employees and their families. The service also includes assistance to line managers, mediation and conflict resolution services, and wellbeing seminars.

ACIAR encourages and promotes a healthy lifestyle by providing access to annual health assessments, subsidies for healthy lifestyle initiatives, annual influenza injections and pre-travel assessments by the Travel Doctor for overseas travellers.

A qualified workplace assessor conducts ergonomic assessments for new employees and employees who experience discomfort at their workstation. Modifications are made to work practices and work areas as required, resulting in less work-related physical ailments and increased productivity.

Workplace diversity

ACIAR promotes a culture of professional behaviour and encourages relationships based on respect and appreciation of each other's differences. Our Workplace Diversity Program encourages and supports the importance of all employees achieving an appropriate balance of work, family and cultural responsibilities.

We continued our support and participation in APS-wide initiatives to promote workplace diversity, Indigenous training and development opportunities, and we encourage people with disabilities to apply for employment opportunities within ACIAR.

Commonwealth Disability Strategy

ACIAR continues to adhere to the principles embodied in the Commonwealth Disability Strategy (CDS) framework and is committed to ensuring that all people seeking employment have fair access to employment opportunities.

As at 30 June 2010, 6% of our staff had identified as having a disability.

People seeking employment with ACIAR can find guidance and assistance on the recruitment page of ACIAR's website.

Collective Agreement

The ACIAR Collective Agreement 2008–2011 came into effect on 20 August 2008.

Productivity savings and efficiencies to fund the agreement included:

- movement of employees from full time to part time
- more-efficient travel arrangements
- better use of, and improvements to, IT systems
- filling of positions at lower salary starting points.

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 Australian Public Service (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.

EXTERNAL SCRUTINY AND AUDITING

Judicial decisions and decisions of administrative tribunals

No decisions were made at either the judicial or administrative tribunal level during the 2009–10 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.

Reports by the Auditor-General and the Australian National Audit Office

One ACIAR-specific audit, of the 2008–09 financial statements, was completed in 2009–10, which was unqualified.

Through its Audit Committee, the Centre examines any relevant findings and recommendations of relevant Australian National Audit Office reports for their applicability to ACIAR.

Parliamentary committees

ACIAR appeared before the following parliamentary committees during the year:

- Senate Standing Committee on Foreign Affairs, Defence and Trade: Senate Budget Estimates (3 June 2010)
- Joint Standing Committee on Foreign Affairs, Defence and Trade: Inquiry into Australia's relationship with the countries of Africa (20 April 2010)
- House of Representatives Standing Committee on Industry, Science and Innovation: Inquiry into Australia's international research collaborations (24 February 2010)
- Senate Standing Committee on Foreign Affairs, Defence and Trade: Supplementary Budget Estimates (22 October 2009)

PURCHASING AND TENDERING COMPLIANCE

Purchasing

ACIAR complies with the Commonwealth Procurement Guidelines and the objectives of Commonwealth procurement. Value for money is applied 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.

The majority 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 A: Exemptions from mandatory procurement procedures, Commonwealth Procurement Guidelines.

Those contracts and agreements under exemptions 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 2009–10.

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 Instructions (CEI 6.02 Procurement) relating to procurement. In accordance with the Commonwealth Procurement Guidelines, ACIAR prepared an Annual Procurement Plan for 2009–10 and this was published on AusTender.

Consultants and contracts

The Chief Executive Instructions set out the policies and procedures for selecting consultants and approving expenditure for them. The procurement method is determined having regard to the nature of the work involved and the broad cost thresholds set out in the Chief Executive 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 is reported separately to that outlined below.

During 2009–10 one contract for a **consultancy** was entered into (refer to table below).

Consultant name	Description	Contract price	Selection process[1]	Justification[2]
GHD Pty Ltd	Review of the Agency Security Plan	$46,000	Direct sourcing	Need for specialised or professional services
Total		$46,000		

[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

ACIAR had a large number of aid/research **contracts** to provide services related mainly to the research program. These contracts totalled $1,773,074 in 2009–10 compared with $3,304,179 in 2008–09 (refer to table below). All contracts over $10,000 were reported in AusTender.

	ACIAR consultancy contracts			Other contracts and agreements[a]	
	Number of new consultancy contracts awarded	Financial limits of new consultancy contracts awarded	2009–10 expenditure	Number of new contracts and agreements awarded	Financial limits of new contracts and agreements awarded
Contracts				168	$1,773,074
– competitive selection process	0	N/A	$0		
– direct approach	1	$46,000	$23,000		
Total	1	$46,000	$23,000	168	$1,773,074

[a] The distinction between 'consultancy contracts' and 'other contracts and agreements' is in accordance with FMG No. 15 – Guidance on Procurement Publishing Obligations

Discretionary grants

ACIAR did not issue any discretionary grants during 2009–10 or have any ongoing grants from previous years.

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 for any such activities. The Centre maintains mailing lists of project personnel and those requesting selected material.

APPENDIXES

APPENDIX 1: BASIS OF AUTHORITY

ACIAR is governed under the *Australian Centre for International Agricultural Research Act 1982* (the Act), proclaimed on 3 June 1982 as Act No. 9 of 1982. The Act was described as 'an Act to encourage research for the purpose of identifying, or finding solutions to, agricultural problems of developing countries'.

The Act was amended in 2007, coming into effect from 1 July 2007, following a review (the Uhrig Review) of the Centre conducted under the auspices of the *Review of Corporate Governance of Statutory Authorities and Office Holders* and undertaken by Mr John Uhrig, AO. 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 Agricultural Research Amendment Act 2007* (the Amendment Act), arising from the review process, was to change the governance arrangements of ACIAR. This replaced the Board of Management with an executive management structure involving a Chief Executive Officer (CEO) and a seven-member Commission. The functions of the CEO are set out at section 5 of the legislation:

'5. Functions of the CEO

1 The functions of the CEO 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 the research programs referred to in paragraph (a)

e to conduct and fund development activities related to those research programs

f to fund International Agricultural Research Centres (IARCs).

2 The CEO must, in performing his or her functions with respect to agricultural research, 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 CEO to carry out research on behalf of the Commonwealth.

4 The CEO must, in performing his or her functions, comply with any directions given to the CEO under section 5A.

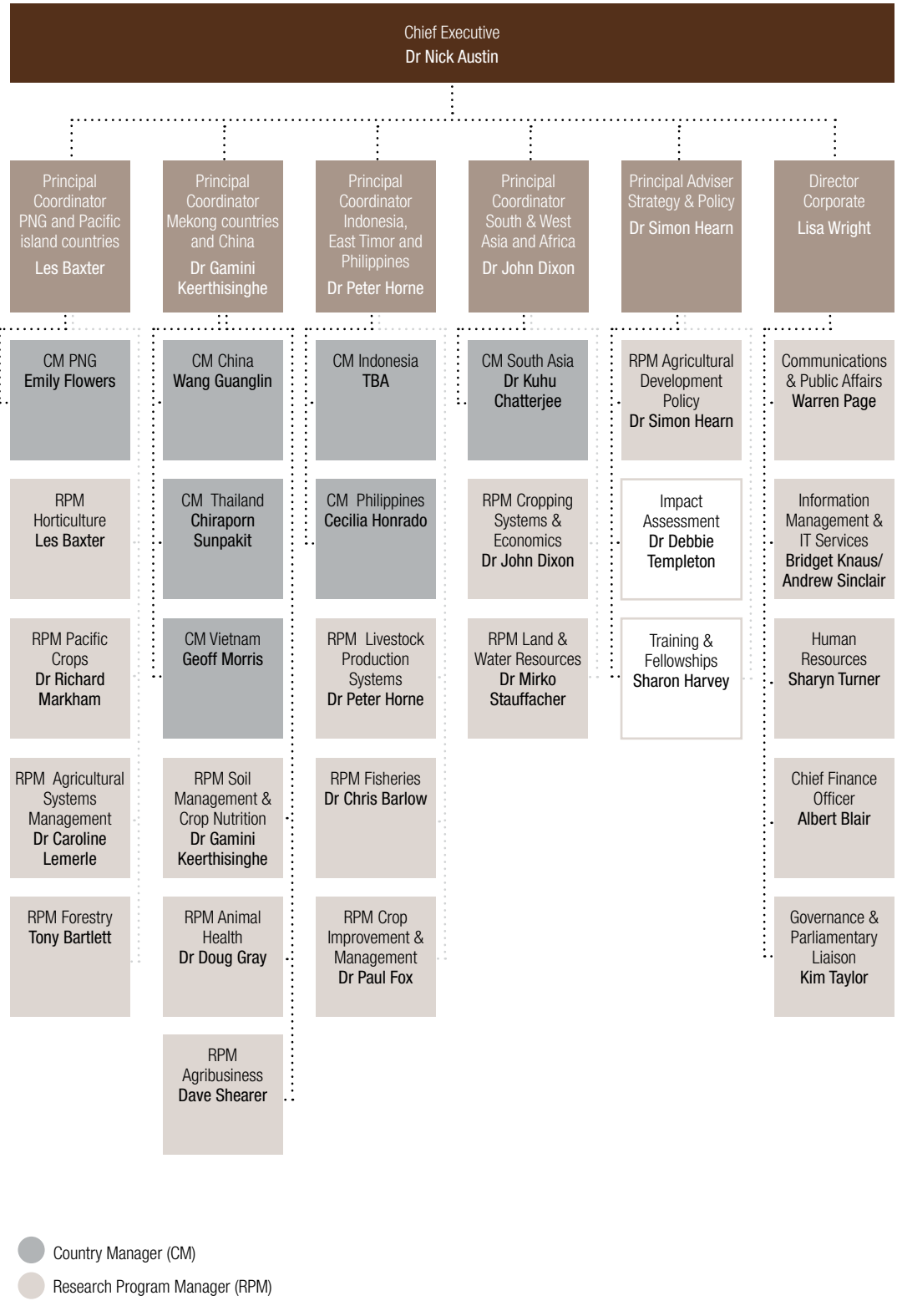
5A Power of Minister to give directions

1 The Minister may, by writing, give directions to the CEO with respect to the performance of the CEO's functions under this Act (including in relation to the appropriate strategic direction the CEO should take in performing his or her functions).

Note: A direction under this section is included in the annual report: see section 39.

2 A direction given under subsection (1) is not a legislative instrument.'

ACIAR organisation chart 30 June 2010



APPENDIX 2: PROGRAM REPORTING FRAMEWORK 2009–10

ACIAR's single outcome, specified in the Portfolio Budget Statement, describes the Centre's role within the context of Australia's development assistance program. In 2009–10 all General Government Sector entities reported on a program basis, necessitating changes to previous arrangements. These arrangements organised reporting in administered items, outputs and output groups. The revisions to reporting change this organising structure to a program-reporting framework, requiring ACIAR to split departmental and administered items for the 2009–10 year, as outlined below.

Transition structure

Outcome 1:

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

Program 1: International Agricultural Research and Development

Administered items: Program Management

Departmental Outputs: Program support

Corporate planning

ACIAR publishes a formal Annual Operational Plan (AOP) 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 AOP is covered in the section 'Tracking performance against the 2009–10 Annual Operational Plan' (see page 149 and the country-specific sections of the report).

Resources for outcome

Financial performance

In 2009–10 ACIAR's direct expenditure on research, including bilateral and multilateral research projects, education and training of researchers, and project-related publications disseminating research results, represented 88.6% of total agency expenditure.

Price of Agency outcome

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[a] 2009–10 $'000	(2) Actual expenses 2009–10 $'000	Variation (column 2 minus column 1) $'000	Budget[b] 2010–11 $'000
Administered expenses				
Ordinary annual services	54,081	53,981	100	61,035
Special account	17,781	15,940	1,841	19,329
Total administered expenses	71,862	69,921	1,941	80,364
Departmental expenses				
Ordinary annual services	9,808	9,067	741	9,853
Revenue from other sources	50	n/a	50	50
Revenue not requiring appropriation in the budget year	24	n/a	24	24
Total departmental expenses	9,882	9,067	815	9,927
Total for Outcome 1	81,744	78,988	2,756	90,291

[a] Full-year budget, including additional estimates

[b] Budget prior to additional estimates. For more details see the ACIAR Annual Operational Plan 2010–11.

APPENDIX 3: ACTIVE RESEARCH PROJECTS 2009–10

Bilateral research projects

Projects may be active in more than one country. Some projects have components in countries not formally listed as ACIAR partners in the 'Year in review' section. In these projects results are being extended beyond partner countries to those countries that would benefit from the work through project networks.

BILATERAL PROJECTS ACTIVE 2009–10	
Project ID	Title
Bangladesh	
ASEM/2009/039	Agricultural policies affecting rice-based farming systems in Bangladesh, Cambodia and Lao PDR
LWR/2009/040	Climate change meta-analysis
LWR/2008/019	Developing multi-scale climate change adaptation strategies for farming communities in Cambodia, Lao PDR, Bangladesh and India
LWR/2008/015	Developing options to mainstream climate adaptation into farming systems in Cambodia, Laos, Bangladesh and India
LWR/2005/146	Expanding the area for Rabi-season cropping in southern Bangladesh
LWR/2005/001	Addressing constraints to pulses in cereals-based cropping systems, with particular reference to poverty alleviation in north-western Bangladesh
Bhutan	
HORT/2005/142	Improving mandarin production in Bhutan and Australia, through the implementation of on-farm best management practices
Cambodia	
AH/2006/025	Understanding livestock movement and the risk of spread of trans-boundary animal diseases
AH/2005/086	Best practice health and husbandry of cattle, Cambodia
AH/2003/008	Improved feeding systems for more-efficient beef cattle production in Cambodia
ASEM/2009/039	Agricultural policies affecting rice-based farming systems in Bangladesh, Cambodia and Lao PDR
ASEM/2006/130	Enhancing production and marketing of maize and soybean in north-western Cambodia and production of summer crops in north-eastern Australia
ASEM/2003/007	CARF – Cambodian Agricultural Research Fund
CSE/2009/037	Improved rice establishment and productivity in Cambodia and Australia
CSE/2006/040	Diversification and intensification of rainfed lowland cropping systems in Cambodia
FIS/2006/137	Analyses of three databases of fisheries data from the Mekong River
HORT/2009/064	Strengthening the Cambodian and Australian vegetable industries through adoption of improved production and postharvest practices: bridging project
HORT/2006/107	Strengthening the Cambodian and Australian vegetable industries through adoption of improved production and postharvest practices
LWR/2009/040	Climate change meta-analysis
LWR/2008/019	Developing multi-scale climate change adaptation strategies for farming communities in Cambodia, Lao PDR, Bangladesh and India
LWR/2008/015	Developing options to mainstream climate adaptation into farming systems in Cambodia, Laos, Bangladesh and India

BILATERAL PROJECTS ACTIVE 2009–10 continued	
Project ID	Title
China	
ADP/2009/002	Climate change and regional agricultural commodity flows
ADP/2007/055	Improving the efficiency of land use change policy in China
CIM/2005/111	More-effective water use by rainfed wheat in China and Australia
CIM/1999/072	Oilseed brassica improvement in China, India and Australia
FST/1999/095	Improving the value chain for plantation-grown eucalypt sawn wood in China, Vietnam and Australia: genetics and silviculture
LWR/2009/040	Climate change meta-analysis
LWR/2007/191	Improving farmer livelihoods through efficient use of resources in crop-livestock farming systems in western China
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/2002/094	Promotion of conservation agriculture using permanent raised beds in irrigated cropping in the Hexi Corridor, Gansu, China
LPS/2006/119	Integrated crop and dairy systems in Tibet Autonomous Region, PR China
LPS/2005/129	Mineral response in Tibetan livestock
LPS/2001/094	Sustainable development of grasslands in western China
East Timor	
CIM/2010/025	Design mission: Seeds of Life 3
CIM/2005/079	Seeds of Life 2: Technical Advisory Committee
CIM/2003/014	Seeds of Life 2
LWR/2009/040	Climate change meta-analysis
LPS/2003/004	Building agricultural knowledge and R&D capacity in Timor Leste: a small projects facility
Ethiopia	
CSE/2009/024	Sustainable intensification of maize–legume cropping systems for food security in eastern and southern Africa (SIMLESA)
Fiji	
ADP/2010/024	Accelerating economic development through engagement and development of local industry institutions in Pacific island countries
ADP/2003/069	Policy options for improving the value of land use in smallholder Fijian agriculture
FIS/2008/031	An assessment of the extent of genetic introgression in exotic culture stocks of tilapia in the Pacific
FIS/2006/138	Developing aquaculture-based livelihoods in the Pacific islands region and tropical Australia
FIS/2005/108	Freshwater prawn aquaculture in the Pacific: improving culture stock quality and nutrition in Fiji
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/2007/072	Postgraduate scholarship scheme for University of South Pacific, Fiji
PC/2010/032	Defining the quarantine environment for Pacific horticultural exports

BILATERAL PROJECTS ACTIVE 2009–10 continued	
Project ID	Title
PC/2009/029	Understanding constraints and opportunities in the use of native floriculture to improve the livelihoods of Indigenous communities in Australia, Papua New Guinea and the Pacific islands
PC/2008/044	Pacific Agribusiness Research for Development Initiative
PC/2008/003	Strengthening the Fiji papaya industry through applied research and information dissemination
PC/2006/053	Evaluation of the impact of dasheen mosaic virus and other viruses on taro yield
PC/2004/064	Biological control of 'mile-a-minute' (*Mikania micrantha*) in Papua New Guinea and Fiji
PC/2004/063	Integrated pest management in a sustainable production system for brassica crops in Fiji and Samoa
PC/2004/049	Improved farming systems for managing soil-borne pathogens of ginger in Fiji and Australia
PC/2003/046	Integrated control of powdery mildew and other disease, weed and insect problems in squash in Tonga and Australia
India	
ADP/2007/062	Facilitating efficient agricultural markets in India: an assessment of competition and regulatory reform requirements
CIM/2007/084	Molecular markers for broadening the genetic base of stem rust resistance genes effective against strain Ug99
CIM/2006/177	Wheat improvement for waterlogging, salinity and element toxicities in Australia and India
CIM/2006/094	Enhancing farm profitability in north-western India and South Australia by improving grain quality of wheat
CIM/2006/071	Indo–Australian project on root and establishment traits for greater water-use efficiency in wheat
CIM/2005/020	Molecular marker technologies for faster wheat breeding in India
CIM/1999/072	Oilseed brassica improvement in China, India and Australia
CSE/2008/014	Happy Seeder technology: a review of alternative rice residue use and management technologies in Punjab
CSE/2006/132	Policy instruments to address air pollution issues in agriculture: implications for Happy Seeder technology adoption in India
CSE/2006/124	Fine-tuning the Happy Seeder technology for adoption in north-western India
CSE/2004/033	Zero-tillage rice establishment and crop–weed dynamics in rice and wheat cropping systems in India and Australia
FIS/2006/144	Strengthening regional mechanisms to maximise benefits to smallholder shrimp farmer groups adopting better management practices
FIS/2002/001	Developing aquaculture in degraded inland areas in India and Australia
LWR/2009/040	Climate change meta-analysis
LWR/2008/019	Developing multi-scale climate change adaptation strategies for farming communities in Cambodia, Lao PDR, Bangladesh and India
LWR/2008/015	Developing options to mainstream climate adaptation into farming systems in Cambodia, Laos, Bangladesh and India
LWR/2007/113	Impacts of climate change and watershed development on whole-of-basin agricultural water security in the Krishna and Murray–Darling Basins
LWR/2006/158	Enhancing institutional performance in watershed management in Andhra Pradesh, India

BILATERAL PROJECTS ACTIVE 2009–10 continued	
Project ID	Title
LWR/2006/073	Assessing the feasibility of farmers managing climate-related crop production risk in Andhra Pradesh, India
LWR/2006/072	Impacts of meso-scale watershed development (WSD) in Andhra Pradesh (India) and their implications for designing and implementing improved WSD policies and programs
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
Indonesia	
ADP/2003/060	Implementation of rodent management in intensive irrigated rice production systems in Indonesia and Vietnam
AGB/2010/018	The effect of research on agricultural productivity in Indonesia
AGB/2005/167	Optimising the productivity of the potato–brassica cropping system in Central and West Java and potato–brassica–allium system in South Sulawesi and Nusa Tenggara Barat
AH/2007/106	Improvement and sustainability of sweetpotato–pig production systems to support livelihoods in highland Papua and West Papua, Indonesia
AH/2006/169	Cost-effective biosecurity for non-industrial commercial poultry operations in Indonesia
AH/2006/166	Improving veterinary service delivery in a decentralised Indonesia
AH/2006/156	Livestock movement and managing disease in eastern Indonesia and eastern Australia
AH/2006/050	Control and characterisation of highly pathogenic avian influenza strains in poultry in Indonesia
AH/2004/040	The epidemiology, pathogenesis and control of highly pathogenic avian influenza in ducks in Indonesia and Vietnam
AH/2004/020	The development of a national surveillance system for classical swine fever, avian influenza, and foot-and-mouth-disease in Indonesia
FIS/2010/016	Application of aquaculture planning tools in Indonesia
FIS/2009/035	Determinants for white spot disease outbreaks in Indonesian smallholder shrimp ponds: a pilot study of locality factors, white spot syndrome virus genotype distributions and pond factors
FIS/2007/124	Diversification of smallholder coastal aquaculture in Indonesia
FIS/2006/144	Strengthening regional mechanisms to maximise benefits to smallholder shrimp farmer groups adopting better management practices
FIS/2006/142	Developing new assessment and policy frameworks for Indonesia's marine fisheries, including the control and management of illegal, unregulated and unreported fishing
FIS/2006/140	Achieving consistent spawning of captive yellowfin tuna (*Thunnus albacares*) broodstock at Gondol Research Institute for Mariculture, Bali, Indonesia
FIS/2006/002	Aceh aquaculture rehabilitation project
FIS/2005/169	Improving productivity and profitability of smallholder shrimp aquaculture and related agribusiness in Indonesia
FIS/2005/137	Control of nodaviral disease in tropical marine finfish hatcheries: enhanced biosecurity through the application of contemporary biotechnology, epidemiology and pathobiology
FIS/2005/009	Technical capacity building and research support for the reconstruction of tsunami-affected, brackishwater aquaculture ponds in Aceh
FIS/2002/111	Culture, capture conflicts: sustaining fish production and livelihoods in Indonesian reservoirs
FIS/2002/077	Improved hatchery and grow-out technology for marine finfish in the Asia–Pacific region

BILATERAL PROJECTS ACTIVE 2009–10 continued	
Project ID	Title
FIS/2002/074	Capacity development to monitor, analyse and report on Indonesian tuna fisheries
FST/2007/052	Improving governance, policy and institutional arrangements to reduce emissions from deforestation and degradation
FST/2006/117	Improving added value and small–medium enterprises' capacity in the utilisation of plantation timber for furniture production in Jepara region
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
HORT/2008/041	Area-wide management of pest fruit flies in an Indonesian mango production system
HORT/2006/147	Integrated pest management of stem borers and insect vectors of viral diseases of sugarcane in Indonesia
HORT/2006/146	Management of fruit quality and pest infestation on mango and mangosteen to meet technical market access requirements
HORT/2003/036	Managing pest fruit flies to enhance quarantine services and upgrade fruit and vegetable production in Indonesia
HORT/2000/043	Huanglongbing management for Indonesia, Vietnam and Australia
LPS/2008/038	Improving reproductive performance of cows and performance of fattening cattle in low-input systems of Indonesia and northern Australia
LPS/2006/005	Evaluating strategies to improve calf survival in West Timor villages
LPS/2006/003	Integrating forage legumes into the maize cropping systems of West Timor
LWR/2009/040	Climate change meta-analysis
SMAR/2008/025	Improved seaweed culture and postharvest waste utilisation in South-East Asia
SMAR/2008/021	Spiny lobster aquaculture development in Indonesia, Vietnam and Australia
SMAR/2007/216	Improving rice productivity in South and Southeast Sulawesi
SMAR/2007/203	Integrated tropical passionfruit production systems in South Sulawesi
SMAR/2007/202	Benchmarking the beef supply chain in eastern Indonesia
SMAR/2007/201	Improving goat production in integrated estate cropping systems in South Sulawesi
SMAR/2007/196	Market development for citrus from eastern Indonesia
SMAR/2007/193	Quality management to enhance effective supply chains for mangoes and rambutans in Nusa Tenggara Barat, Indonesia and Australia
SMAR/2007/100	Support for development of improved approaches to technology assessment and knowledge exchange
SMAR/2007/068	Productivity and profitability enhancement of tropical pulses in Indonesia and Australia
SMAR/2007/063	Enhancing farmer engagement with specialty coffee chains in eastern Indonesia
SMAR/2006/096	Scaling up herd management strategies in crop–livestock systems in Lombok, Indonesia
SMAR/2006/061	Building capacity in the knowledge and adoption of Bali cattle improvement technology in South Sulawesi
SMAR/2006/011	Enterprise development, value chains and evaluation of non-timber forest products for agroforestry systems in West Timor, Flores, Sumba and Savu, eastern Indonesia
SMAR/2005/074	Improving cocoa production through farmer involvement in demonstration trials of potentially superior and pest/disease-resistant genotypes and integrated management practices
SMCN/2007/040	Building more-profitable and resilient farming systems in Nanggroe Aceh Darussalam and New South Wales

BILATERAL PROJECTS ACTIVE 2009–10 continued	
Project ID	Title
Kenya	
CSE/2009/024	Sustainable intensification of maize–legume cropping systems for food security in eastern and southern Africa (SIMLESA)
Kiribati	
ADP/2010/024	Accelerating economic development through engagement and development of local industry institutions in Pacific island countries
PC/2008/044	Pacific Agribusiness Research for Development Initiative
Laos	
AH/2006/161	Management of pig associated zoonosis in the Lao PDR
AH/2006/159	Best practice health and husbandry of cattle and buffalo in Lao PDR
AH/2006/025	Understanding livestock movement and the risk of spread of trans-boundary animal diseases
ASEM/2009/039	Agricultural policies affecting rice-based farming systems in Bangladesh, Cambodia and Lao PDR
ASEM/2006/060	Lao Agricultural Research Fund (LARF)
ASEM/2005/124	Extension approaches to scaling out livestock production in northern Lao PDR
CSE/2009/004	Developing improved farming and marketing systems in rainfed regions of southern Lao PDR
CSE/2006/041	Increased productivity and profitability of rice-based lowland cropping systems in Lao PDR
FIS/2007/076	Thai Department of Fisheries assistance with Lao Fish Passage Development Program
FIS/2006/183	Development of fish passage criteria for floodplain species of central Lao PDR
FIS/2006/137	Analyses of three databases of fisheries data from the Mekong River
FIS/2005/078	Culture-based fisheries development in Lao PDR
FST/2005/100	Value-adding to Lao PDR plantation timber products
FST/2004/057	Enhancing on-farm incomes through improved silvicultural management of teak and paper mulberry plantations in Luang Prabang province of Lao PDR
LWR/2009/040	Climate change meta-analysis
LWR/2008/019	Developing multi-scale climate change adaptation strategies for farming communities in Cambodia, Lao PDR, Bangladesh and India
LWR/2008/015	Developing options to mainstream climate adaptation into farming systems in Cambodia, Laos, Bangladesh and India
Malawi	
CSE/2009/043	Scoping study on enhanced food security in eastern and southern Africa
Mozambique	
CSE/2009/024	Sustainable intensification of maize–legume cropping systems for food security in eastern and southern Africa (SIMLESA)
Nauru	
FIS/2008/031	An assessment of the extent of genetic introgression in exotic culture stocks of tilapia in the Pacific
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

BILATERAL PROJECTS ACTIVE 2009–10 continued	
Project ID	Title
HORT/2005/153	Development of integrated crop management practices to increase sustainable yield and quality of mangoes in Pakistan and Australia
LPS/2005/132	Improving dairy production in Pakistan through improved extension services
LWR/2009/040	Climate change meta-analysis
LWR/2005/144	Optimising canal and groundwater management to assist water user associations in maximising crop production and managing salinisation
LWR/2002/034	Refinement and adoption of permanent raised bed technology for the irrigated maize–wheat cropping system in Pakistan
Papua New Guinea	
AH/2008/037	Potential economic impacts of the Varroa bee mite on the pollination of major crops in Papua New Guinea
AH/2006/157	Animal health surveillance systems for Papua New Guinea
ASEM/2009/042	Improving women's business acumen in Papua New Guinea: working with women smallholders in horticulture
ASEM/2008/042	Postgraduate scholarship scheme at the University of Technology Lae, Papua New Guinea – Phase 2
ASEM/2008/036	Improving livelihoods of smallholder families through increased productivity of coffee-based farming systems in the highlands of Papua New Guinea
ASEM/2008/035	Scoping study to examine the state of coffee resources and socioeconomics in Papua New Guinea
ASEM/2007/096	The policy environment in Papua New Guinea and its impact on the adoption of the outputs of past ACIAR projects
ASEM/2006/129	Early warning and drought preparedness for improved management of crop production in Papua New Guinea
ASEM/2006/127	Commercial sector/smallholder partnerships for improving incomes in the oil palm and cocoa industries in Papua New Guinea
ASEM/2006/035	Improving marketing efficiency, postharvest management and value-addition of sweetpotato in Papua New Guinea
ASEM/2006/023	Re-commercialisation of the Papua New Guinea pyrethrum industry and improving harvested yields in Australia
ASEM/2005/094	Improving the profitability of village broiler production in Papua New Guinea
ASEM/2004/017	Assessment and improvement of quality management during postharvest processing and storage of coffee in Papua New Guinea
FIS/2009/014	Preliminary assessment of invasive and exotic fish species in Papua New Guinea
FIS/2008/043	Advisory Committee: barramundi feed development trial in Western province, Papua New Guinea
FIS/2008/031	An assessment of the extent of genetic introgression in exotic culture stocks of tilapia in the Pacific
FIS/2008/023	Increasing production from inland aquaculture in Papua New Guinea for food and income security
FIS/2006/138	Developing aquaculture-based livelihoods in the Pacific islands region and tropical Australia
FIS/2005/096	Assessment of the impact of the PNG purse seine fishery on tuna stocks, with special focus on the impact of fish aggregation devices
FIS/2004/065	Culture of promising indigenous fish species and bioremediation for barramundi aquaculture in northern Australia and Papua New Guinea

BILATERAL PROJECTS ACTIVE 2009–10 continued	
Project ID	Title
FST/2009/012	Identification of researchable issues underpinning a vibrant balsa wood industry in Papua New Guinea
FST/2007/078	Development of a Papua New Guinea timber industry based on community-based planted forests: design and implementation of a national germplasm delivery system
FST/2006/120	Increasing downstream value-adding in Papua New Guinea's forest and wood products industry
FST/2006/088	Promoting diverse fuelwood production systems in Papua New Guinea
FST/2006/048	Processing of *Canarium indicum* nuts: adapting and refining techniques to benefit farmers in the South Pacific
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
LWR/2009/040	Climate change meta-analysis
PC/2010/026	Validating and documenting a strategy for producing virus-free sweetpotato planting material in Papua New Guinea
PC/2009/029	Understanding constraints and opportunities in the use of native floriculture to improve the livelihoods of indigenous communities in Australia, Papua New Guinea and the Pacific islands
PC/2007/039	The control of basal stem rot of oil palm caused by *Ganoderma* in Solomon Islands
PC/2006/106	Screening and field trials of high-carotenoid sweetpotatoes in Solomon Islands and Papua New Guinea to improve human vitamin A status
PC/2006/063	Integrated pest management for Finschhafen disorder of oil palm in Papua New Guinea
PC/2004/064	Biological control of 'mile-a-minute'(*Mikania micrantha*) in Papua New Guinea and Fiji
PC/2003/042	Fruit fly management in Papua New Guinea
PC/2003/029	Management of potato late blight in Papua New Guinea
SMCN/2009/013	Sustainable management of soil and water resources for oil palm production systems in Papua New Guinea
SMCN/2008/032	Sustainable vegetable production in Central province, Papua New Guinea
SMCN/2008/008	Increasing vegetable production in Central province, Papua New Guinea, to supply Port Moresby markets
SMCN/2004/071	Reducing pest and disease impact on yield in selected Papua New Guinea sweetpotato production systems
SMCN/2004/067	Soil fertility management in the Papua New Guinea highlands for sweetpotato-based cropping systems
SMCN/2004/041	Productivity and marketing enhancement for peanut in Papua New Guinea and Australia
Philippines	
ASEM/2009/044	Improving development outcomes for smallholder farmers through closer collaboration between landcare and other ACIAR projects
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/2002/051	Sustaining and growing landcare systems in the Philippines and Australia

BILATERAL PROJECTS ACTIVE 2009–10 continued	
Project ID	Title
FIS/2009/033	Preliminary assessment of the handline (banca) fisheries in the Philippines
FIS/2003/033	Integrated fisheries resource management (Rinconada Lakes, Philippines and New South Wales, Australia)
FIS/2002/077	Improved hatchery and grow-out technology for marine finfish in the Asia–Pacific region
HORT/2010/030	Samal Island mango growers R&D study tour to Australia
HORT/2007/067	Improved domestic profitability and export competitiveness of selected fruit value chains in the southern Philippines and Australia program
HORT/2007/066	Enhanced profitability of selected vegetable value chains in the southern Philippines and Australia program
HORT/2001/049	Development of PRSV-P-resistant papaya genotypes by introgression of genes from wild *Carica* species
LWR/2009/040	Climate change meta-analysis
SMAR/2008/025	Improved seaweed culture and postharvest waste utilisation in South-East Asia
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)
Samoa	
ADP/2010/024	Accelerating economic development through engagement and development of local industry institutions in Pacific island countries
FIS/2008/031	An assessment of the extent of genetic introgression in exotic culture stocks of tilapia in the Pacific
FIS/2006/138	Developing aquaculture-based livelihoods in the Pacific islands region and tropical Australia
FST/2004/054	Improving value and marketability of coconut wood
PC/2008/044	Pacific Agribusiness Research for Development Initiative
PC/2006/053	Evaluation of the impact of dasheen mosaic virus and other viruses on taro yield
PC/2004/063	Integrated pest management in a sustainable production system for brassica crops in Fiji and Samoa
Solomon Islands	
ADP/2010/024	Accelerating economic development through engagement and development of local industry institutions in Pacific island countries
FIS/2008/031	An assessment of the extent of genetic introgression in exotic culture stocks of tilapia in the Pacific
FIS/2006/138	Developing aquaculture-based livelihoods in the Pacific islands region and tropical Australia
FST/2007/020	Improving silvicultural and economic outcomes for community timber plantations in the Solomon Islands by interplanting with *Flueggea flexuosa* and other Pacific agroforestry species
FST/2004/055	Domestication and commercialisation of *Canarium indicum* in Papua New Guinea
PC/2009/029	Understanding constraints and opportunities in the use of native floriculture to improve the livelihoods of indigenous communities in Australia, Papua New Guinea and the Pacific islands
PC/2008/044	Pacific Agribusiness Research for Development Initiative
PC/2007/039	The control of basal stem rot of oil palm caused by *Ganoderma* in Solomon Islands

BILATERAL PROJECTS ACTIVE 2009–10 continued	
Project ID	Title
PC/2006/106	Screening and field trials of high-carotenoid sweetpotatoes in Solomon Islands and Papua New Guinea to improve human vitamin A status
PC/2004/030	Control of Asian honeybees in the Solomon Islands
PC/2003/047	Improved plant protection in the Solomon Islands
South Africa	
LPS/2008/013	Can we segment the South African market for beef palatability?
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 RSA
Tanzania	
CSE/2009/024	Sustainable intensification of maize–legume cropping systems for food security in eastern and southern Africa (SIMLESA)
Thailand	
CSE/2006/041	Increased productivity and profitability of rice-based lowland cropping systems in Lao PDR
FIS/2007/076	Thai Department of Fisheries assistance with Lao Fish Passage Development Program
FIS/2006/183	Development of fish passage criteria for floodplain species of central Lao PDR
FIS/2006/144	Strengthening regional mechanisms to maximise benefits to smallholder shrimp farmer groups adopting better management practices
FIS/2005/078	Culture-based fisheries development in Lao PDR
FIS/2002/111	Culture, capture conflicts: sustaining fish production and livelihoods in Indonesian reservoirs
FIS/2002/077	Improved hatchery and grow-out technology for marine finfish in the Asia–Pacific region
HORT/2006/170	Plant biosecurity: technological research and training for improved pest diagnostics in Thailand and Australia
SMCN/2007/215	Improving the reliability of rainfed, rice–livestock-based farming systems in north-eastern Thailand
Tonga	
ADP/2010/024	Accelerating economic development through engagement and development of local industry institutions in Pacific island countries
FIS/2006/172	Winged oyster pearl industry development in Tonga
FIS/2006/138	Developing aquaculture-based livelihoods in the Pacific islands region and tropical Australia
PC/2008/044	Pacific Agribusiness Research for Development Initiative
PC/2006/173	Tongan tropical fruit production: improving genetic diversity and production capacity building
PC/2003/046	Integrated control of powdery mildew and other disease, weed and insect problems in squash in Tonga and Australia
Vanuatu	
ADP/2010/024	Accelerating economic development through engagement and development of local industry institutions in Pacific island countries
FIS/2008/031	An assessment of the extent of genetic introgression in exotic culture stocks of tilapia in the Pacific
FIS/2006/138	Developing aquaculture-based livelihoods in the Pacific islands region and tropical Australia
FST/2008/010	Development and delivery of germplasm for sandalwood and whitewood in Vanuatu and northern Australia

BILATERAL PROJECTS ACTIVE 2009–10 continued	
Project ID	Title
FST/2007/057	Socioeconomic constraints to smallholder sandalwood in Vanuatu
FST/2006/048	Processing of *Canarium indicum* nuts: adapting and refining techniques to benefit farmers in the South Pacific
FST/2005/089	Improved silvicultural management of *Endospermum medullosum* (whitewood) for enhanced plantation forestry outcomes in Vanuatu
FST/2004/053	Establishing forest pest detection systems in South Pacific countries and Australia
PC/2008/044	Pacific Agribusiness Research for Development Initiative
Vietnam	
ADP/2003/060	Implementation of rodent management in intensive irrigated rice production systems in Indonesia and Vietnam
AGB/2008/002	Improved market engagement for sustainable upland production systems in the north-western highlands of Vietnam
AGB/2006/112	Increasing the safe production, promotion and utilisation of indigenous vegetables by women in Vietnam and Australia
AGB/2006/066	Improving productivity and fruit quality of sweet persimmon in Vietnam and Australia
AGB/2005/113	Structural adjustment implications of trade liberalisation in Vietnam
AGB/2002/086	Improving postharvest quality of temperate fruits in Vietnam and Australia
AH/2004/040	The epidemiology, pathogenesis and control of highly pathogenic avian influenza in ducks in Indonesia and Vietnam
FIS/2007/094	Policy, institutional and economic constraints to aquaculture research adoption in Vietnam
FIS/2006/144	Strengthening regional mechanisms to maximise benefits to smallholder shrimp farmer groups adopting better management practices
FIS/2006/141	Improving feed sustainability for marine aquaculture in Vietnam and Australia
FIS/2005/114	Building bivalve hatchery production capacity in Vietnam and Australia
FIS/2002/077	Improved hatchery and grow-out technology for marine finfish in the Asia–Pacific region
FST/2008/007	Advanced breeding and deployment methods for tropical acacias
FST/2006/087	Optimising silvicultural management and productivity of high-quality acacia plantations, especially for sawlogs
FST/1999/095	Improving the value chain for plantation-grown eucalypt sawn wood in China, Vietnam and Australia: genetics and silviculture
HORT/2000/043	Huanglongbing management for Indonesia, Vietnam and Australia
LPS/2004/073	Capacity building on cattle production at Dong Giang district, Quang Nam province, Vietnam
LWR/2009/040	Climate change meta-analysis
SMAR/2008/021	Spiny lobster aquaculture development in Indonesia, Vietnam and Australia
SMCN/2007/109	Sustainable and profitable crop and livestock systems for south-central coastal Vietnam
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/2002/073	Efficient nutrient use in rice production in Vietnam achieved using inoculant biofertilisers

Note on project information for 2009–10

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 transfer 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. SMAR projects may also be active in other countries.

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.

MULTILATERAL PROJECTS ACTIVE IN 2009–10	
Project ID	Title
ADP/2005/068	Plausible futures for economic development and structural adjustment: impacts and policy implications for Indonesia and Australia
ADP/2005/066	Markets for high-value commodities in Indonesia: promoting competitiveness and inclusiveness
AGB/2006/115	Linking vegetable farmers with markets in West and Central Java, Indonesia
AH/2004/046	Forage legumes for supplementing village pigs in Lao PDR
CIM/2008/027	Development of conservation cropping systems in the drylands of northern Iraq
CIM/2007/122	Sustainable intensification of rice–maize production systems in Bangladesh
CIM/2007/120	Improving post-rainy sorghum varieties to meet the growing grain and fodder demand in India
CIM/2007/065	Sustainable wheat and maize production in Afghanistan
CIM/2006/176	Developing molecular markers to enable selection against chalk in rice
CIM/2004/004	Plant genetic resource conservation, documentation and utilisation in central Asia and the Caucasus
CIM/2003/067	Ensuring productivity and food security through sustainable control of yellow rust of wheat in Asia
CIM/1999/062	Improving the quality of pearl millet residues for livestock
CSE/2009/024	Sustainable intensification of maize–legume cropping systems for food security in eastern and southern Africa (SIMLESA)
CSE/2009/005	Improved rice germplasm for Cambodia and Australia
FIS/2010/031	Fish supply and demand scenarios in the lower Mekong basin
FIS/2009/061	Aquaculture and food security in Solomon Islands: Phase 1
FIS/2007/116	Improving resilience and adaptive capacity of fisheries-dependent communities in Solomon Islands
FIS/2003/059	Sea-ranching and restocking sandfish (*Holothuria scabra*) in Asia–Pacific
FST/2007/119	Mahogany and teak furniture: action research to improve value-chain efficiency and enhance livelihoods
FST/2005/177	Improving economic outcomes for smallholders growing teak in agroforestry systems in Indonesia
HORT/2008/040	Integrated crop production of bananas in Indonesia and Australia
HORT/2004/048	Integrated disease management for anthracnose, *Phytophthora* blight and whitefly-transmitted geminiviruses in chilli pepper in Indonesia
LPS/2005/063	Improving the competitiveness of pig producers in an adjusting Vietnam market
PC/2007/111	Incursion prevention and management of coffee berry borer (in Papua New Guinea and Indonesia (South Sulawesi and Papua)
PC/2006/114	Managing cocoa pod borer in Papua New Guinea through improved risk incursion management capabilities, IPM strategies and stakeholder participatory training
PC/2005/134	The use of pathogen tested planting materials to improve sustainable sweetpotato production in Solomon Islands and Papua New Guinea
PC/2005/077	Integrated crop management package for sustainable smallholder gardens in Solomon Islands
SMCN/2006/013	Increasing food security and farmer livelihoods through enhanced legume cultivation in the central dry zone of Burma

APPENDIX 4: PUBLICATIONS 2009–10

Publ. code	Title	Authors	Year	Pages
Monographs				
MN 131a	[Indonesian translation of MN131] Integrated pest and disease management for sustainable cocoa production: a training manual for farmers and extension workers	John Konam, Yak Namaliu, Rosalie Daniel and David Guest	2009	36
MN 139	Improving village chicken production: a manual for field workers and trainers	Christine Ahlers, Robyn Alders, Brigitte Bagnol, Ana Bela Cambaza, Mohamed Harun, Richard Mgomezulu, Halifa Msami, Bob Pym, Peter Wegener, Ed Wethli and Mary Young	2009	200
MN 140	A guide to upland cropping in Cambodia: maize *(online only)*	Stephanie Belfield and Christine Brown	2009	43
MN 140a	[Khmer translation of MN140] A guide to upland cropping in Cambodia: maize	Stephanie Belfield and Christine Brown	2010	43
MN 141	Weeds of upland crops in Cambodia *(online only)*	Robert Martin and Pol Chanthy	2009	81
MN 142	Forages and farmers: case studies from South-East Asia	John Connell, Werner Stür and Peter Horne	2010	120
MN 144	Yam nutrition: nutrient disorders and soil fertility management	Jane N. O'Sullivan	2010	112
Proceedings				
PR 131	Village chickens, poverty alleviation and the sustainable control of Newcastle disease	R.G. Alders, P.B. Spradbrow and M.P. Young (eds)	2009	236
PR 132	Spiny lobster aquaculture in the Asia–Pacific region	Kevin C. Williams (ed.)	2009	162
PR 133	Use of the *FecB* (Booroola) gene in sheep-breeding programs	J. Van der Werf, S. Walkden-Brown, C Nimbkar and V.S. Gupta (eds)	2009	238
Technical reports				
TR 70	Characterisation of the tuna purse seine fishery in Papua New Guinea	Simon Nicol, Tim Lawson, Karine Briand, David Kirby, Brett Molony, Don Bromhead, Peter Williams, Emmanuel Schneiter, Ludwig Kumoru and John Hampton	2009	44
TR 71	Soil fertility in sweetpotato-based cropping systems in the highlands of Papua New Guinea	Gunnar Kerchhof (ed.)	2009	126
TR 72	Beef palatability in the Republic of South Africa and the implications for niche-marketing strategies	John Thompson, Rod Polkinghorne, Alan Gee, Dan Motiang, Phillip Strydom, Mpho Mashau, Jones Ng'ambi, Rietta deKock and Heather Burrow	2010	56
TR 73	Balsa: biology, production and economics in Papua New Guinea	Stephen Midgley, Michael Blyth, Neville Howcroft, Dao Midgley and Alan Brown	2010	100

Publ. code	Title	Authors	Year	Pages
TR 74	Social capital and cattle marketing chains in Bali and Lombok, Indonesia	Ian W. Patrick, Graham R. Marshall, I.G.G.A. Ambarawati and Muktasam Abdurrahman	2010	78
Impact assessment series reports				
IAS 64	Reform of domestic grain markets in China: a reassessment of the contribution of ACIAR-funded economic policy research	J.D. Mullen	2010	40
IAS 65	ACIAR investment in research on forages in Indonesia	Greg Martin	2010	60
IAS 66	Extending low-cost fish farming in Thailand: an ACIAR–World Vision collaborative program	David N. Harris	2010	72
IAS 67	The biology, socioeconomics and management of the barramundi fishery in Papua New Guinea's Western province	Hayden Fisher	2010	51
IAS 68	Benefit–cost meta-analysis of investment in the International Agricultural Research Centres	Anthea McClintock and Garry Griffith	2010	48
Corporate publications				
	Annual Operational Plan 2009–10	ACIAR	2009	132
	Annual Operational Plan 2009–10: Indonesian (20 pp.), Vietnamese (16 pp.), Cambodian (16 pp.) and Lao (16 pp.) extracts	ACIAR	2009	
	Annual Report 2008–09	ACIAR	2009	266
	ACIAR Country Profiles 2009–10 *(online only)*: Philippines (59 pp.), Pacific islands (82 pp.), Cambodia, Lao PDR and Thailand (101 pp.), Vietnam (79 pp.), Indonesia (138 pp.), Papua New Guinea (108 pp.), South Asia (122 pp.)	ACIAR	2009	
	Partners in Research for Development magazine (November 2009 – February 2010, March–June 2010)	ACIAR		32
	Adoption of ACIAR project outputs: studies of projects completed in 2005–06	David Pearce and Debbie Templeton (eds)	2010	68

APPENDIX 5: STAFFING STATISTICS

Public Service Act 1999 *employee numbers at 30 June 2010*[a]

	Ongoing staff	Non-ongoing staff	Total
Full-time			
Male	5	11	16
Female	17	5	22
Part-time			
Male	1	0	1
Female	9	1	10
Total	**32**	**17**	**49**

[a] Excludes two inoperative (leave without pay (LWOP)) employees and CEO

At 30 June 2010 the Centre employed 68 employees, of whom 49 are employed under the *Public Service Act 1999* and are located in Canberra, and 19 are at overseas missions and embassies. ACIAR has one female SES Band 1 employee.

The CEO is not included in these statistics as he is Principal Executive Officer (PEO) Band C.

Staff turnover

ACIAR enjoyed good retention rates in 2009–10. Seven employees ceased employment and two staff remained on leave without pay. The table below shows a comparison of employee turnover over the past 5 years.

	2005–06	2006–07	2007–08	2008–09	2009–10
Retrenched	1		1		
Promotions/transfers		4	2	1	
End of contract		5	6		1
Resigned	1	2	7	3	3
Retired	3	1	1	2	3
Leave without pay		1		2	2
Temporary movement	1				
Total	**6**	**13**	**17**	**8**	**9**

Non-APS employees employed overseas at 30 June 2010

ACIAR employs 19 (18.5 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	1	2	0	**2**
Beijing	1	0	1	0	**1**
Hanoi	2	2	3	1	**4**
Jakarta	2	2	3	1	**4**
Manila	1	2	3	0	**3**
New Delhi	0	3	3	0	**3**
Port Moresby	0	2	2	0	**2**
Total	**7**	**12**	**17**	**2**	**19**

ACIAR classification structure and salary rates

Breakdown of ACIAR employees by broadband (excludes LWOP)

ACIAR broadband	APS classification	ACIAR local designations and salary (A$)			Employees by classification	Ongoing/ non-ongoing	Male/ female
Band 3	EL 2	EL 2 (A)	Program Manager	113,743	2	2/0	1/1
				111,450			
				109,156			
				106,860			
				104,567			
		EL 2 (B)	Unit Manager	106,439	0	0/0	0/0
				102,492			
				98,548			
				94,603			
				90,660			
	EL 1	EL 1	Manager	87,897	6	6/0	2/4
				85,732			
				83,567			
				81,401			
Band 2	APS 6	APS 6	APS 6	72,940	5	4/1	0/5
				70,577			
				68,218			
				65,858			
				63,496			
	APS 5	APS 5	APS 5	62,339	6	5/1	2/4
				61,159			
				59,974			
				58,790			
	APS 4	APS 4	APS 4	57,231	14	12/2	1/13
				55,723			
				54,217			
				52,709			
Band 1	APS 3	APS 3	APS 3	51,044	3	2/1	0/3
				49,794			
				48,541			
				47,292			
	APS 2	APS 2	APS 2	46,044	0	0/0	0/0
				44,536			
				43,028			
				41,522			
	APS 1	APS 1	APS 1	40,550	No employees at this classification		
				39,262			
				37,976			
				36,690			

Research Program Manager structure

APS classification	ACIAR local designations and salary (A$)			Employees by classification	Ongoing/ non-ongoing	Male/ female
EL 2 RPM Band	SPRS	Research Program Manager / Senior Principal Research Scientist	146,787	12	0/12	11/1
			142,732			
			138,676			
			134,624			
			130,568			
	PRS	Research Program Manager / Principal Research Scientist	127,375			
			123,968			
			120,556			
			117,149			
	SRS	Research Program Manager / Senior Research Scientist	113,743			
			111,450			
			109,156			
			106,860			
			104,567			

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 FOI Act.

ACIAR received no requests in 2009–10 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 requests. 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 <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, project final reports, 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>

APPENDIX 7: ECOLOGICALLY SUSTAINABLE DEVELOPMENT AND ENVIRONMENTAL PERFORMANCE

This report is provided in accordance with section 516A of the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). It comprises the Centre's report on its ecologically sustainable development and environmental performance.

Project-related environmental impacts

ACIAR's guidelines for project development include triggers to ensure that any projects developed that result in significant environmental impacts follow all due processes under the EPBC Act. When partner organisations are developing projects, either as the commissioned (lead) agency or as a collaborator, they must fulfil all relevant obligations under the EPBC Act. All obligations under international arrangements to which Australia is a signatory (e.g. the Convention on Biological Diversity) must also be fulfilled.

Where potential environmental impacts are identified, project proponents must demonstrate that all relevant EPBC obligations have been fulfilled. In addition, obligations under international arrangements to which Australia is a signatory, specifically for biological resources, must have been met and properly documented. Reference to the EPBC Administrative Guidelines on Significance (EPBC Guidelines) is included in such processes. Letters of approval relating to the use of experimental animals and/or genetically modified organisms 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 assessment by the relevant ACIAR Research Program Manager (RPM). This determines if environmental impacts outlined in the proposal having reference to, among 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, Water, Heritage and the Arts.

How the outcomes of the organisation contribute to ecologically sustainable development

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 the key planning document—the Annual Operational Plan. At the operational level, project development, evaluation and monitoring deliver on this mandate.

Effect of the organisation's activities on the environment (s. 516A(6)(c))

Examples of projects with environmental benefits are spread throughout ACIAR's mandated region of operations, in developing countries of the Asia–Pacific region and in Sub-Saharan Africa. ACIAR projects target research to address problems in developing countries that may also yield results applicable to environmental management in Australia, as follows. Such benefits are either a secondary objective or are the result of research having application within Australian settings.

- Fisheries—sustainably managing marine species, including inshore fisheries; managing cross-country fisheries resources; and developing sustainable aquaculture technologies to minimise wild capture and harvest in ACIAR's mandate region
- Land and Water Resources—developing new approaches to managing and alleviating the effects of salinity and soil acidification; investigating water allocation and management strategies; assessing land suitability, crop diversification and constraints; minimising pollutants in waterways; developing and promoting new cropping systems for conservation agriculture

- Agricultural Systems Management and Development Policy—developing processes and practices to mitigate against climate change; examining policy and institutional frameworks and their impacts on water management
- Forestry—improving breeding technologies for Australian species, such as eucalypts and acacias, widely used for forestry plantations in Australia and parts of Asia; enhancing disease- and pest-surveillance methodologies and management; improving germplasm usage and management
- Crop Improvement and Pest Management—improving productivity and sustainability in farming systems through crop diversification and the use of alternative cropping methods; developing control and management strategies for weeds and pests threatening crop species; collecting and conserving unique crop and legume germplasm.

Measures being taken by the organisation to minimise the impact of its activities on the environment (s. 516A(6)(d))

Rather than implement a formal environmental management system (EMS), ACIAR has chosen to adopt an informal system for managing environmental impacts that is built upon the EMS framework circulated to government departments and agencies. The framework has been used to ensure that 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.

Resource	Usage	
	2008–09	2009–10
Energy (kilowatt hours)	206,954	201,630
Water (kilolitres)	218	269
Paper (reams)	962	870

Mechanisms, if any, for reviewing and increasing the effectiveness of these measures (s. 516A(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.

APPENDIX 8: COMPLIANCE CHECKLIST

Part of report	Description	Requirement	Page No
	Letter of transmittal	Mandatory	iii
	Table of contents	Mandatory	iii
	Index	Mandatory	iii
	Glossary	Mandatory	iii
	Contact officer(s)	Mandatory	ii
	Internet home page address and internet address for report	Mandatory	ii
Review by Secretary	Review by departmental secretary	Mandatory	5
	Summary of significant issues and developments	Suggested	5–10
	Overview of department's performance and financial results	Suggested	5–10
	Outlook for following year	Suggested	9
	Significant issues and developments—portfolio	Portfolio departments—suggested	n/a
Departmental overview	Overview description of department	Mandatory	11–74
	Role and functions	Mandatory	172
	Organisational structure	Mandatory	173
	Outcome and program structure	Mandatory	174
	Where outcome and program structures differ from PB Statements / PAES or other portfolio statements accompanying any other additional appropriation bills (other portfolio statements), 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 programs and contribution to outcomes	Mandatory	174–175
	Actual performance in relation to deliverables and KPIs set out in PB Statements / PAES or other portfolio statements	Mandatory	144
	Performance of purchaser/provider arrangements	If applicable, suggested	n/a
	Where performance targets differ from the PBS/PAES, details of both former and new targets, and reasons for the change	Mandatory	144
	Narrative discussion and analysis of performance	Mandatory	11–74
	Trend information	Mandatory	144–161
	Significant changes in nature of principal functions/services	Suggested	n/a
	Factors, events or trends influencing departmental performance	Suggested	5–10
	Contribution of risk management in achieving objectives	Suggested	84–85
	Social justice and equity impacts	Suggested	n/a
	Performance against service charter customer service standards, complaints data, and the department's response to complaints	If applicable, mandatory	n/a
	Discussion and analysis of the department's financial performance	Mandatory	86–87
	Discussion of any significant changes from the prior year or from budget	Suggested	86
	Agency resource statement and summary resource tables by outcomes	Mandatory	174–175
	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	n/a

Part of report	Description	Requirement	Page No
Management accountability			
Corporate governance	Statement of the main corporate governance practices in place	Mandatory	76–85
	Names of the senior executive and their responsibilities	Suggested	206–207
	Senior management committees and their roles	Suggested	84–85
	Corporate and operational planning and associated performance reporting and review	Suggested	11–74, 144–161
	Approach adopted to identifying areas of significant financial or operational risk	Suggested	84–85
	Agency heads required to certify that their agency comply with the Commonwealth Fraud Control Guidelines	Mandatory	85
	Policy and practices on the establishment and maintenance of appropriate ethical standards	Suggested	80
	How nature and amount of remuneration for SES officers is determined	Suggested	77
External scrutiny	Significant developments in external scrutiny	Mandatory	167
	Judicial decisions and decisions of administrative tribunals	Mandatory	167
	Reports by the Auditor-General, a Parliamentary Committee or the Commonwealth Ombudsman	Mandatory	167
Management of human resources	Assessment of effectiveness in managing and developing human resources to achieve departmental objectives	Mandatory	164–166
	Workforce planning, staff turnover and retention	Suggested	165
	Impact and features of enterprise or collective agreements, determinations, common law contracts and AWAs	Suggested	166
	Training and development undertaken and its impact	Suggested	165
	Occupational health and safety performance	Suggested	165
	Productivity gains	Suggested	166
	Statistics on staffing	Mandatory	164, 190–193
	Enterprise or collective agreements, determinations, common law contracts and AWAs	Mandatory	166
	Performance pay	Mandatory	165
Assets management	Assessment of effectiveness of assets management	If applicable, mandatory	n/a
Purchasing	Assessment of purchasing against core policies and principles	Mandatory	168–169
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). It 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 pro forma as set out in Attachment D.)	Mandatory	169
Australian National Audit Office Access Clauses	Absence of provisions in contracts allowing access by the Auditor-General	Mandatory	168
Exempt contracts	Contracts exempt from the AusTender	Mandatory	168
Commonwealth Disability Strategy	Report on performance in implementing the Commonwealth Disability Strategy	Mandatory	166
Financial statements	Financial statements	Mandatory	90–141

Part of report	Description	Requirement	Page No
Other information			
	Occupational health and safety (s. 74 of the *Occupational Health and Safety Act 1991*)	Mandatory	165
	Freedom of information (ss. 8(1) of the *Freedom of Information Act 1982*)	Mandatory	194
	Advertising and market research (s. 311A of the *Commonwealth Electoral Act 1918*) and statement on advertising campaigns	Mandatory	169
	Ecologically sustainable development and environmental performance (s. 516A of the *Environment Protection and Biodiversity Conservation Act 1999*)	Mandatory	195–196
Other	Grant programs	Mandatory	169
	Correction of material errors in previous annual report	If applicable, mandatory	n/a
	List of requirements	Mandatory	197–199

ACRONYMS AND ABBREVIATIONS

ABARE	Australian Bureau of Agricultural and Resource Economics
ACIAR	Australian Centre for International Agricultural Research
ADP	Agricultural Development Policy (program)
AGB	Agribusiness (program)
AH	Animal Health (program)
AIPD-AVA	Australia–Indonesia Partnership for Decentralisation – Adding Value to Agriculture
ANAO	Australian National Audit Office
AOP	Annual Operational Plan
APS	Australian Public Service
ARDSF	Agricultural Research and Development Support Facility
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
ASEM	Agricultural Systems Management (program)
ASLP	Agriculture Sector Linkages Program (Australia–Pakistan)
ATSE	Academy of Technological Sciences and Engineering (Australia)
AusAID	Australian Agency for International Development
BCRI	Beef Cattle Research Institute
CACS	Coastal Aquaculture Classification Scheme
CARDI	Cambodian Agricultural Research and Development Institute
CARF	Cambodian Agricultural Research Fund
CAVAC	Cambodia Agricultural Value Chain (program)
CCRG	Collaborative Competitive Research Grants
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)
CIM	Crop Improvement and Management (program)
CIMMYT	International Maize and Wheat Improvement Center (Mexico)
CIP	International Potato Center (Peru)
CSE	Cropping Systems and Economics (program)
CSF	classical swine fever
CSIRO	Commonwealth Scientific and Industrial Research Organisation (Australia)
DFAT	Department of Foreign Affairs and Trade (Australia)
ENT	East Nusa Tenggara (province)
EPBC	environmental protection and biodiversity conservation
FAO	Food and Agriculture Organization (of the United Nations)
FFS	farmer field school
FIS	Fisheries (program)
FMA Act	*Financial Management and Accountability Act 1997*
FOI	freedom of information
FST	Forestry (program)
FTE	full-time equivalent (staff)
HORT	Horticulture (program)
IARCs	International Agricultural Research Centres
IAS	impact assessment series
ICARDA	International Center for Agricultural Research in the Dry Areas (Syria)
ICATAD	Indonesian Centre for Agricultural Technology Assessment and Development

ICRISAT	International Crop Research Institute for the Semi-arid Tropics (India)
IDM	integrated disease management
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute (USA)
ILRI	International Livestock Research Institute (Kenya)
IPM	integrated pest management
IRRI	International Rice Research Institute (Philippines)
IWMI	International Water Management Institute (Sri Lanka)
KPI	key performance indicator
LARF	Lao Agricultural Research Fund
LFPI	Landcare Foundation of the Philippines Inc
LPS	Livestock Production Systems (program)
LWS	Land and Water Resources (program)
MAF	Ministry of Agriculture and Fisheries (East Timor)
MDGs	Millennium Development Goals
NAD	Nanggroe Aceh Darussalam (province)
NARS	National Agricultural Research Systems
NGO	non-government organisation
ODE	Office of Development Effectiveness
PAC	Policy Advisory Council
PARDI	Pacific Agribusiness Research for Development Initiative
PC	Pacific Crops (program)
PEO	Principal Executive Officer
PhP	Philippine peso
PNG	Papua New Guinea
PNG WiA	PNG Women in Agriculture
R&D	research and development
RPM	Research Program Manager
RSA	Republic of South Africa
SADI	Smallholder Agribusiness Development Initiative
SES	Senior Executive Service (of APS)
SMAR	Support for Market-Driven Adaptive Research
SMCN	Soil Management and Crop Nutrition (program)
SoL2	Seeds of Life (program)
SPC	Secretariat of the Pacific Community
TAR	Tibet Autonomous Region
TARI	Tibet Agricultural Research Institute
Unitech	University of Technology (PNG)
USP	University of the South Pacific
VSU	Visayas State University (Philippines)
WNT	West Nusa Tenggara (province)
WTO	World Trade Organization
WV	World Vision
ZT	zero tillage

CORPORATE DIRECTORY

CORPORATE DIRECTORY

ACIAR

GPO Box 1571
Canberra ACT 2601
AUSTRALIA

Phone +61 2 6217 0500
Fax +61 2 6217 0501
aciar@aciar.gov.au

CEO

Dr Nick Austin
Phone: 02 6217 0500
austin@aciar.gov.au

Country Offices

Cambodia, Lao PDR, Thailand and Burma

Khun Chiraporn Sunpakit
Phone: +66 2 344 6300 ext 483
chiraporn.sunpakit@dfat.gov.au

Indonesia

Ms Frances Barns
Phone: +62 21 2550 5578
frances.barns@dfat.gov.au

North Asia

Mr Wang Guanglin
Phone: +86 10 5140 4172
guanglin.wang@dfat.gov.au

Papua New Guinea

Ms Emily Flowers
Phone: +675 325 9333 ext 299
emily.flowers@dfat.gov.au

Philippines

Ms Cecilia Honrado
Phone: +63 2 757 8241
cecilia.honrado@dfat.gov.au

South Asia

Dr Kuhu Chatterjee
Phone: +91 11 4139 9925
kuhu.chatterjee@dfat.gov.au

Vietnam

Mr Geoff Morris
Phone: +84 4 3774 0202
geoff.morris@dfat.gov.au

International Agricultural Research Centres

Ms Cherree Webeck
Phone: 02 6217 0524
webeck@aciar.gov.au

Research Program Management

Agricultural Development Policy / Principal Adviser, Strategy and Policy

Dr Simon Hearn
Phone: 02 6217 0547
hearn@aciar.gov.au

Agribusiness

Mr David Shearer
Phone: 02 6217 0548
shearer@aciar.gov.au

Agricultural Systems Management

Dr Caroline Lemerle
Phone: 02 6217 0530
lemerle@aciar.gov.au

Animal Health

Dr Doug Gray
Phone: 02 6217 0540
gray@aciar.gov.au

Crop Improvement and Management

Dr Paul Fox
Phone: 02 6217 0527
fox@aciar.gov.au

Cropping Systems and Economics / Senior Adviser

Dr John Dixon
Phone: 02 6217 0531
dixon@aciar.gov.au

Education and Training

Ms Sharon Harvey
Phone: 02 6217 0503
harvey@aciar.gov.au

Fisheries

Dr Chris Barlow
Phone: 02 6217 0508
barlow@aciar.gov.au

Forestry

Mr Tony Bartlett
Phone: 02 6217 0549
bartlett@aciar.gov.au

Horticulture

Mr Les Baxter
Phone: 02 6217 0553
baxter@aciar.gov.au

Impact Assessment

Dr Debbie Templeton
Phone: 02 6217 0541
templeton@aciar.gov.au

Livestock Production Systems

Dr Peter Horne
Phone: 02 6217 0522
horne@aciar.gov.au

Land and Water Resources

Dr Mirko Stauffacher
Phone: 02 6217 0561
stauffacher@aciar.gov.au

Pacific Crops

Dr Richard Markham
Phone: +679 337 9392
markham@aciar.gov.au

Soil Management and Crop Nutrition

Dr Gamini Keerthisinghe
Phone: 02 6217 0558
keerthisinghe@aciar.gov.au

Corporate Programs

Director Corporate

Ms Lisa Wright
Phone: 02 6217 0535
wright@aciar.gov.au

Communications and Public Affairs

Mr Warren Page
Phone: 02 6217 0577
page@aciar.gov.au

Finance and Facilities

Mr Albert Blair
Phone: 02 6217 0567
blair@aciar.gov.au

Governance and Parliamentary Liaison

Ms Kim Taylor
Phone: 02 6217 0568
taylor@aciar.gov.au

Human Resources

Ms Sharyn Turner
Phone: 02 6217 0556
turner@aciar.gov.au

Information Management

Ms Bridget Knaus
Phone: 02 6217 0578
knaus@aciar.gov.au

Information Technology

Mr Andrew Sinclair
Phone: 02 6217 0505
sinclair@aciar.gov.au

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