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Newsletter

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President of East Timor Xanana Gusmao inspects the newly opened facilities at the Hera Campus of East Timor Agricultural University. Photo: Tania Paul NTU

Restored facilities opened at East Timor University

Facilities at the Hera campus of East Timor University that were damaged or destroyed in the country's crisis in 1999 have been restored through an ACIAR project. The newly refurbished experimental station and laboratories were recently reopened.

The ACIAR project has funded a twinning arrangement between the Faculty of Agriculture at the University and agricultural faculties from several Australian universities. Under the leadership of Professor John Janes of Curtin University in Western Australia the project is not only rehabilitating the experimental farm but also assisting with staff training and curriculum development.

Other project activities include re-development of an agriculture library

collection and assistance with the information technology requirements in agriculture. The scientists are also working to establish a suite of small research projects to provide both a framework for interaction around which many of the other activities could be based (including student projects) as well as international linkages.

As fast as facilities come on line they are in use for the students. To mark the completion of this phase a dedication ceremony took place on 13 February 2003, attended by President Xanana Gusmao, Prime Minister Mari Alkatiri and senior government ministers, along with Australian Ambassador Mr Paul Foley. Curtin, Northern Territory and Queensland Universities all sent representatives, and Deputy Director John Skerritt represented ACIAR.

President Gusmao has been a strong supporter of the project and his ongoing interest was apparent when he stayed for a tour that extended well beyond his scheduled time.

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Help for Afghan cereal crops

ACIAR and AusAID have combined to commission a new project in Afghanistan, to support the rebuilding of the country's devastated cropping sector. The project, known as 'Seeds of Strength', will supply wheat and maize seed—Afghanistan's two most important cereal crops—suitable for local conditions. CIMMYT, the International Maize and Wheat Improvement Centre, which is the world's leading source of seed stock for these crops, will undertake the project work.

Afghanistan has very limited cropping land—3.7 million hectares is not a great size for producing food sufficient for 25 million people. By comparison Australia (around 20 million people) is a net food exporter, with more than 21 million hectares of available cropping land.

Food self-sufficiency has only been possible in Afghanistan in good seasons, those not ruined by drought or interrupted by war. Almost three-quarters of cropping land is not irrigated and therefore dependent on

good rainfall. Conflict extending over the past two decades has destroyed much of the irrigation and farming infrastructure, with resultant decline in yields. Estimates now put food production at less than half of the total capacity.

Looting of the National Seed Bank at the end of 2001 led to loss of Afghanistan's reserves of seed. Such banks ensure the availability of reserve stocks should the cropping cycle, which produces seed for the following season, be interrupted or fail completely.



Afghan farmer planting wheat seeds. Source: US Agency for International Development

Suitable cultivars

'Seeds of Strength' will initially focus on the immediate provision from CIMMYT stocks of seed for suitable cultivars. CIMMYT has worked before in Afghanistan and also closely collaborates with national breeding programs in several nearby countries. A scientist based in Kabul will coordinate project activities, backed up by CIMMYT staff based in West Asia and surrounding countries.

The medium term aim is to identify wheat and maize varieties best suited to Afghan growing conditions. The scientists will look for disease resistance, particularly resistance to yellow rust—the major disease affecting wheat.

Local farmer involvement is a crucial component of the project. Farmers, State agricultural research stations and NGOs will combine to test varieties in farmers' fields in key growing regions. In addition farmers and community groups will receive training in seed production. The scientists will include for testing old varieties previously collected from Afghanistan and stored at CIMMYT and in Australia.

The best varieties chosen will then be multiplied locally, aiding both the promotion and dissemination of improved varieties. Afghan scientists will benefit from working alongside the international experts, thus building the country's capacity.

The project is operating under the broad umbrella of the *CGIAR Future Harvest to Rebuild Agriculture in Afghanistan*, led by ICARDA with CIMMYT a key consortium member. Longer term it is hoped that a group of projects, including 'Seeds of Strength', will equip Afghanistan for self sufficiency in agriculture and agricultural research skills.

Acronyms and abbreviations

APSIM	Agricultural Production Systems Simulator	GGERI	Gansu Grasslands Ecological Research Institute
AusAID	Australian Agency for International Development	ICARDA	International Centre for Agricultural Research in Dry Areas
CGIAR	Consultative Group on International Agricultural Research	ILRI	International Livestock Research Institute
CIMMYT	International Maize and Wheat Improvement Centre	IWRAM	integrated water resources assessment and management
COGENT	Coconut Genetic Resources Network	NGO	Non-Government Organisation
CRIFC	Central Research Institute for Food Crops (Indonesia)	OPRA	Oil Palm Research Association
CSIRO	Commonwealth Scientific and Industrial Research Organisation	PNG	Papua New Guinea
ENSO	El Nino-Southern Oscillation	SARDI	South Australian Research and Development Institute
		VAC	garden-pond-livestock (Vietnam)

Director gets acquainted with China program

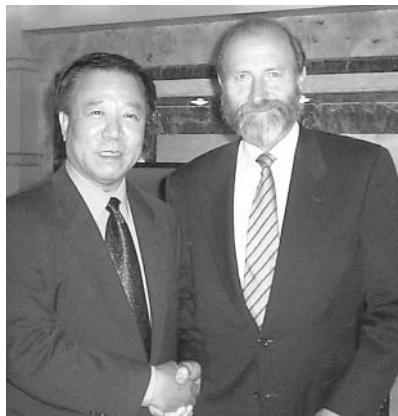
Director Peter Core had an opportunity to learn about ACIAR's strong relationship with China and elements of its China program during his visit from 22 to 28 November.

'Peter's visit was a real success,' says ACIAR China Country Manager Chris Brittenden. 'He met some of our key players in the west including the Governor of Gansu Province—population around 40 million—and some of the Government leaders in Beijing, including Vice Minister Liu Yanhua.'

The Director was keen to gain as wide an understanding as possible of China, its people and the scope of the relationship that has grown over nearly two decades of interaction with ACIAR. He began his round of visits in Lanzhou in Gansu, western China. At the Gansu Grasslands Ecological Research Institute (GGERI) he heard reports from two ACIAR projects, *Improving the productivity and sustainability of rainfed farming systems for the western Loess Plateau of Gansu Province* and *Lucerne adapted to adverse conditions in China and Australia*. Dr Bill Bellotti, the Australian project leader for the former project was in Lanzhou, which fostered a productive discussion on the project.

A group of Australians was presenting a course in Scientific Writing, with sponsorship from ACIAR, in the GGERI building during the visit to Lanzhou. The Director appreciated the report from the writing course—its value could be measured by the fact that as well as the 20 collaborating scientists registered, an equal number of 'casual observers' also chose to attend.

The Director of the GGERI, Dr Nan Zhibiao, helped to further the Director's understanding of the situation for many families in the region who depend on agriculture for their livelihood. He arranged for him to visit the Dongxiang Autonomous



Director Peter Core is welcomed by the Governor of Gansu Province Mr Lu Hao.

County, which is home to one of China's 56 ethnic groups. With a population around 250 000 the group for the most part derives its livelihood from growing wheat and potatoes and herding sheep. This county has suffered continuous drought for the last 10 years, and many people travel up to 10 kilometres per day to obtain drinking water for family members and livestock.

Meeting the farmers

The Director visited homes of farmers and their dependants where he saw firsthand the reality of daily life. He made a later visit to Dingxi County, where work was under way to implement Central Government programs returning croplands to forest and grass, in order to lift the county from its place as one of the poorest regions in China. He saw evidence of benefit from investment in income-generating enterprises.

In Langzhou itself the Director met with the Governor of Gansu, Mr Lu Hao, who personally presented the Provincial Government's research priorities and concerns. The province was, he said, one of the poorest in China and was in a position of needing ACIAR's collaborative assistance.

The Director also visited the Gansu Agricultural University where he learned more about ACIAR projects associated with the university—*Improving the productivity and sustainability of rainfed farming systems for the western Loess Plateau of Gansu Province*, *Lucerne adapted to adverse conditions in China and Australia* and *Postharvest handling and disease control of melons*. There was strong evidence of the progress of ACIAR projects and the commitment of the collaborators.

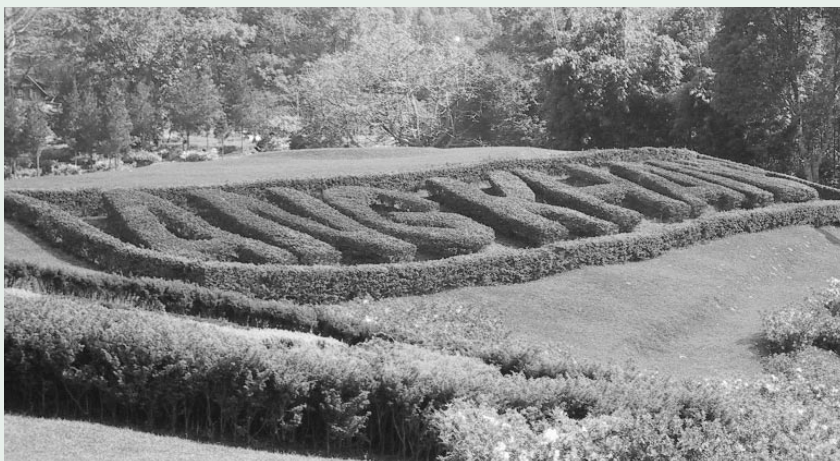
Briefings in Beijing

Finally the Director spent time in Beijing where he received briefings and entered into discussion with a number of senior officers posted at the Australian Embassy. He also held constructive meetings with the President of the Chinese Academy of Agricultural Science, Dr Zhai Huqu, the Vice Minister of the Ministry of Science and Technology Dr Liu Yanhua (who is a member of the ACIAR Policy Advisory Council), the Director General of International Cooperation Professor Liang Qu, and Professor Gao Huanwen, Professor Tang Wenhua and other senior members of the Chinese Agricultural University.



Snow caused a delay in the mountain pass on the way to Dongxiang Autonomous County in Gansu Province.

The Royal Project Foundation: leading Thailand in highland development



The Royal Research Station at Angkhang is a showcase for highland agriculture and horticulture.

It is unusual for ACIAR to have a project collaborator under Royal patronage. But such is the case in Thailand, where the Royal Project Foundation has for some years taken part in ACIAR projects.

The Foundation had its origins in a journey undertaken in 1972 by the King of Thailand, His Majesty King Bhumipol Adulyadej, into the high mountain areas and forests of northern Thailand. There he encountered hill tribe groups growing opium poppies to sustain themselves. Moreover, he realised that in clearing land for farming they were destroying forests, causing damage to the landscape and polluting watercourses. This damage had far-reaching negative implications for the hill tribes themselves and large areas downstream.

The King resolved to bring assistance to these hill tribes, to help them find other crops suited to their remote villages and to educate and encourage them to develop better stewardship of the land. He founded the 'Royal Hill Tribe Assistance Project', which today has become the Royal Project Foundation.

As part of the Project the King purchased farmland situated in an upland valley close to the border of Myanmar from the hill tribes. Here he asked Kasetsart University, Bangkok, to develop an agricultural research station for growing and testing temperate plants and for demonstrating the crops to tribal agriculturalists.

The Royal Angkhang Agricultural Station is today a showpiece for temperate farming and horticulture. Where 30 years ago the land was virtually devoid of vegetation there now stands in a deep green valley a complex of magnificent lawns and flower gardens, greenhouses and orchards, large market gardens and an arboretum. At 1400 metres it can get quite cold in the winter months, but it rarely reaches freezing. It is an ideal location for temperate fruits, cut flowers, temperate vegetables, tea and coffee. The station promotes an active research and development program, managed and supported by Kasetsart University.

The Royal Project Foundation encourages enterprise right through the production and marketing chain. Its produce is sold with its own trademark. The Agricultural Station receives many tourists, who buy flowers, fruits and vegetables as part of their stay. People from the local

hill tribes have the opportunity to work in the production, marketing and distribution of produce.

Agricultural and horticultural crops found suitable have been introduced to the hill tribes. Today there is a huge strawberry industry, and cool climate stone fruit orchards are gaining acceptance.

ACIAR connections

Since 1994 ACIAR has funded work to identify stone fruit varieties suited to the cooler hill regions of Thailand. The Royal Project Foundation has participated, with trials of fruit trees at the Angkhang Station and elsewhere. Many scientists working with the Foundation have received training through the project, and this training now reaches other scientists, extension officers and farmers. Prior to this project, most Thai researchers had a limited understanding of, or skills in, the growing of temperate fruits in the subtropics. They now have enough knowledge and experience in these areas to introduce stonefruit production to the wider communities of the northern hills of Thailand, with some technology transfer evident for Laos and Vietnam.

At the Station researchers seek to refine orchard management and tree culture technology, including



Trials of different crops grown on terraced land at the Royal Angkhang Research Station.

tree pruning and training and environmentally acceptable methods of pest and disease control. The Station is also a repository for collections of suitable fruit varieties – for instance peach, nectarine, apple, pear, plum, cherry, and apricot – and a training centre for scientists. New low-chill material is under trial from Australia, Mexico, Brazil, USA, Tunisia, China, Laos and Vietnam.

The Royal Project Foundation is involved in another ACIAR project, based in Chiangmai, which is examining the whole spectrum of problems associated with over-exploitation and nonsustainable use of available land, water and vegetation resources. Sustainable development requires land and vegetation management to account for effects on ecosystems, land and water, and to consider the local communities and cultures that depend on those resources.

With ACIAR funding, researchers have developed a computer-based integrated water resources assessment and management (IWRAM) framework, which enables users to explore the impacts of policy, planning and regulatory options on aspects such as soil erosion, water availability and the socioeconomic conditions of households and communities. IWRAM has been successfully trialled in the Mae Chaem catchment in northern Thailand.

Research to refine the framework is continuing through the ACIAR project, involving the Centre for Resource and Environmental Studies at the Australian National University working with a 'user group' under the umbrella of the Royal Project Foundation. The group comprises the Department of Agriculture, the Land Development Department (LDD), the Royal Forestry Department, the Royal Irrigation Department and the Office of National Water Resources Committee.

Janet Lawrence
ACIAR

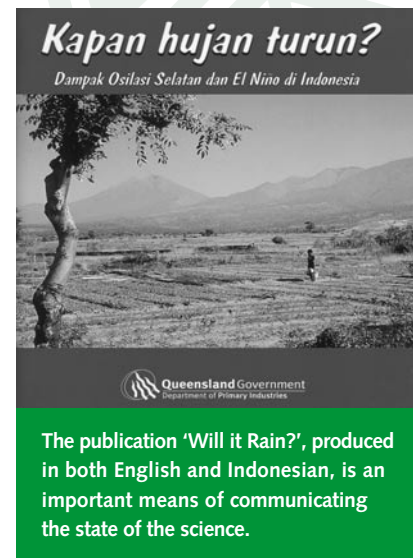
Better climatic predictions aid agricultural management

Climate variability affects agricultural production, human health and the well being of communities throughout the world. Seasonal climate forecast tools are under development and an ACIAR project evaluated alternative seasonal climate forecast signals and statistical methods in Australia, Zimbabwe, Indonesia and India. The project sought to determine relationships between climate indicators and impacts on agriculture and assessed the value of forecasts at key decision points in the agricultural system.

The impacts of climate variability are particularly relevant in those countries affected by the El Nino–Southern Oscillation (ENSO) phenomenon—such as Australia, Indonesia, India and some African countries. The project showed that translating relatively recent ENSO knowledge into useful information for managing risks and opportunities associated with climate variability is a challenge for traditional agricultural research and extension.

The project has made important contributions to the understanding of ENSO in Indonesia, where the impact is as great as anywhere in the world. A key finding was that the changing seasonal pattern of spatial coherence of rainfall was closely aligned with predictions. Only where there is good coherence, as at the beginning of the wet season, can useful predictions be expected. As a result, it is anticipated Badan Meteorologi dan Geofisika will use this knowledge for issuing seasonal forecasts.

The scientists also developed and applied a range of decision-support systems. They developed an international version of the Australian Rainman software package, which has been an excellent aid in assembling a global database of monthly rainfall and some other data sets. Outputs for India and Zimbabwe have



significantly increased understanding, particularly through use of simulation models to show amplified impacts on agricultural systems compared to ENSO impacts on seasonal rainfall. A publication 'Will it rain?' has been produced in Indonesian and is an important means of communicating the state of the science.

Decision-support tools have been developed for analysing stream flow and optimising water allocation decisions in Lombok, Indonesia. The successful calibration and validation of the GRASP pasture simulation model for Zimbabwe pastures was another highlight. The long-term simulations have been valuable in better identifying ENSO impacts and opportunities to use seasonal climate forecasting to increase production and reduce degradation risks.

Future impacts from the project will accrue mainly from changes in farm management decisions to better adapt to climate variability, and prepare for climate change. These changes will often be realised in better adapted farming systems and more sustainable production.

Outcomes of 11 recent projects

The following are some short reports of outcomes from recently completed ACIAR projects

Integrated aquaculture in the highland region of Vinh Phuc Province, North Vietnam

Results from Vietnam

The integrated farming system ('VAC' or garden-pond-livestock) practised in Vietnam has provided a significant boost to income levels of farmers in lowland areas. The Ministry of Fisheries, Vietnam has placed integrated and sustainable aquaculture production in the highland region as the highest priority in its national research and development strategy. Studies carried out near Ba Vi clearly indicated that the physio-chemical conditions faced by the farmers in the highland area were different from those of the lowland areas. Extension and development officers working in this area mainly rely on the related work carried out elsewhere, and therefore this often does not provide adequate answers to the real problems the farmers face.

Before an integrated farming system can progress some fundamental technical issues need to be addressed in the freshwater aquaculture sector, in the highland region in general and Vinh Phuc Province specifically, in relation to application of the VAC model. Adaptive research that investigates the successful recycling of nutrients, while addressing the specific physio-chemical conditions prevailing in the highland area, will assist the identification of factors for sustainable development of primary production in the highland region. This will have benefits in Vietnam and other highland regions of Asia.

Applications in Australia

Findings from the Vietnam component of the project were highly relevant to Australian research and development programs on integrated wastewater treatment and aquaculture production. An Australian-based project, jointly conducted by SARDI, Aquatic Sciences, Urrbrae Agricultural High School and

Environmental Health Department, Flinders University, linked the outcomes of the Vietnam component of the project with their application in Australia. The Australian objective was to develop models under Australian conditions for recycling farm waste through aquaculture.

The following key outcomes from Vietnam were considered while formulating experiments in Australia: pig manure nutrient release pattern and primary production rate; nutrient ratio (nitrogen and phosphorus) and optimum nutrient concentration for fish polyculture; nitrogen and phosphorus utilisation rate with time; nutrient and plankton interactions; plankton and pig manure interactions; fish growth rates. These outcomes helped in designing the experiments as well as interpreting the results obtained in the Australian wastewater treatment project.

The highlights of the Australian study were a pilot-scale integrated wastewater treatment and an aquaculture model developed for Urrbrae Agricultural High School. The key scientific information includes: nutrient depletion rate summer versus winter in a high-rate algal tank; impact of micro-algae and zooplankton manipulation on nutrient depletion rate; influence of duckweed, freshwater mussels and fish (rainbow fish and silver perch) on wastewater treatment system; nutrient tolerance of silver perch and rainbow fish.

Further to the Urrbrae project, a pilot trial was undertaken to grow carp in treated sewage water in Adelaide. Again the sewage treatment was adjusted to give nutrient levels suitable to fish culture. This trial was highly successful and the carp grew at a rate of 8 g/day, which was quite high compared to other semi-intensive aquaculture operations in South Australia. A commercial operation is scheduled to start soon.



The VAC system at work on a farm in Vietnam

Quarantine systems for fruit flies in Papua New Guinea

Fruit fly causes serious crop losses in fruit and vegetables in all Pacific Island countries. Papua New Guinea has excellent potential for producing fresh horticultural products that can be exported, but this can only be achieved with proper fruit fly control and quarantine strategies. This project defined the fruit fly pest species in PNG and developed preharvest field control strategies. Scientists conducted pest risk assessment studies to determine the chances of spread of different species within and from PNG and the losses that may occur. They also developed quarantine procedures in PNG to restrict the spread of fruit flies.

The project achieved all objectives and made a significant contribution to the management of pest fruit flies in PNG. Some important highlights are: a detailed knowledge of the fruit fly species of economic importance to PNG, their distribution and host plant range; an accurate assessment of the movement of fresh horticultural produce, by air travellers, from the PNG mainland to the island Provinces and the Torres Strait Islands; demonstration of field pest control strategies to village, school and producer communities.



Changing the lure and insecticide in a fruit fly trap. Such traps have been placed throughout PNG to assess the distribution and abundance of PNG's fruit fly fauna.



Wrapping bananas is a traditional method in several regions of PNG to combat fruit pests, including banana fruit fly.

A major opportunity arose when there was an outbreak of banana fruit fly in East New Britain. The project assisted with funding for an experienced consultant to assess the problem, training of field staff, undertaking surveys to define the geographic limit of spread and introducing field pest control strategies. Without this intervention, many village households would have lost important cooking bananas which form their staple food supply.

The project has established a permanent fruit fly quarantine surveillance program in PNG to enable the early detection of new incursions of pest species from other countries. There are now in place emergency response procedures for the eradication of new exotic incursions, should they occur. Many PNG staff have received training through extensive in-field collaboration and specific training workshops. As well, Mr Solomon Balagawi received an ACIAR John Allwright Fellowship to undertake postgraduate studies at Griffith University.

Monitoring contamination of grain and food by mycotoxins and pesticides in Vietnam and Australia

Contaminant testing is becoming an essential part of market access compliance and increasingly, a serious barrier to equitable market access by developing countries. This project was established in Vietnam to enhance the monitoring of agri-produce contamination by mycotoxins and pesticides. The project aimed to develop rapid, simple immunoassay procedures to detect the contaminants of most immediate concern.

Mycotoxins and pesticides are two groups of contaminants of agri-produce that present similar analytical challenges. Methods of analysis for mycotoxins and pesticides divide into two groups, those based on expensive instrumental techniques and the cheaper tests based on the specificity of biological recognition systems. Two examples of the latter type of technology are the enzyme-linked immunosorbent assay (ELISA) and immuno-affinity chromatography (IAC). Vietnamese partners in this project had already acquired some expertise in both methods. By further developing this expertise the project aimed to make access to the technology affordable for Vietnam, while enhancing the country's capability for 'international validation' of its testing/certifying capability.

Project achievements include: identifying pesticide and mycotoxin targets for immunoassays based on surveys of Vietnamese agricultural produce, knowledge of pesticide usage, and climatic conditions; training Vietnamese scientists to postgraduate level in immunochemical techniques, particularly in the chemical procedures required; development of immunoassays for aflatoxin B1, ochratoxin A, alternariol monomethyl ether, DDT and endosulphan and the training of scientists in high performance liquid chromatography (HPLC) techniques to support assay validation.

Prototype kits were developed in both ELISA and immunoaffinity column forms for aflatoxin B1. The kits are now in use in Vietnam (at feedmills) and independent validation of the prototype kits is taking place. In addition, the Vietnamese partners provided training courses for national scientists and international audiences.

Genetic diversity and propagation of mangroves

Mangrove communities have been heavily exploited for their wood, and disturbed by other activities including aquaculture, mining, and disposal of chemical wastes. This project was established with Thailand to undertake molecular biological studies on genetic variation in mangroves, and with Vietnam to develop methods for micropropagation of mangrove through tissue culture.

Excellent progress was made in achieving the objectives related to the application of DNA marker techniques for the mangrove *Avicennia marina*. This research was conducted at Southern Cross University, and was given a headstart when important groundwork for the molecular studies of genetic diversity in this species was initiated and supported by Southern Cross University in 1997. The results have been disseminated in several publications in refereed journals, and have raised important questions about population structure, mating systems and gene flow that are currently being addressed in Australia (*A. marina*) and Thailand (*Rhizophora apiculata*). In Thailand, the collaborators have succeeded in establishing new techniques of DNA analysis with support and training from Southern Cross University. The project has thus clearly contributed to building research capacity in Thailand.

Glasshouse trials of *A. marina* from different provenances have shown that plants maintain differences in morphological and growth characters when grown in the same environment.



Southeast Asia's mangrove communities have been heavily exploited.

This is an important result as it demonstrates that these traits are genetically determined. It still needs to be determined what characteristics are considered desirable for re-establishment of new plantations in specific locations, and the extent to which these can be sought out in natural populations.

A major aspect of the project has been to develop micropropagation of mangroves using tissue culture techniques. However, it has become evident that mangroves (*A. marina* and *Rhizophora spp.*) do not respond well in tissue culture. Satisfactory progress has been made at Burringbar NSW and Yen Lap, Vietnam, yet much work remains ahead before routine and efficient micropropagation of desirable genotypes can be achieved. The project has received an 18-month extension.

Improving and maintaining productivity of eucalypt plantations in India and Australia

This project, located in Kerala, India and in Western Australia, identified then developed practices for manipulating soil organic matter, and determined soil and tree nutrient and water status. This formed the basis for implementing silvicultural regimes that optimise conservation and use of site resources and enable sustainable wood production from eucalypt plantations.

A final review of the project found that it had been successful within the limitation of its five-year time frame. Improved establishment techniques resulted in stimulating early growth to mid rotations; initial economic analyses indicate an internal rate of return of 20% from best treatments. Strategic research on stand and soil nutrient economy has provided sound insights into the operation of these processes and their dynamics. However, data are needed from a full rotation (7 years) to enable simulation with a degree of confidence.

The project has gathered much practical information on fertiliser use, weed control and ground cover planting with eucalypt plantations, and demonstrated the differential responses of species over different sites. In particular it has quantified responses to treatments, enabling economic analyses that can inform management decisions. At this stage of the rotation there appeared to be no response to retention of slash from the previous rotation, and to nitrogen-fixing groundcovers—contrary to expectation from research elsewhere, although this may change further into the rotation. The research has produced a better scientific understanding of the dynamics of fertiliser response in this climate and on these soils, including the role of soil organic matter in nutrient cycling.

Control of fasciolosis in cattle and buffaloes in Indonesia, Philippines and Cambodia

Fasciolosis, a disease caused by the parasitic liver fluke *Fasciola gigantica*, is the most important parasitic disease of cattle and buffalo in the humid wet tropics. This project sought means to control the disease through biological methods and changes in stock management.

All of the objectives of the project have been achieved. The overall output of the project has been to demonstrate that the application of a scientifically based fasciolosis control program will

alleviate poverty through increased animal production. The wider application (and benefits) of the results of this project will require the publication and dissemination of results, and commitment to the extension program by the collaborating countries.

The community impact has been to educate animal owners who participated in the research and teach them how to increase their income from animal production. The project also produced a major impact on the capacity of researchers to successfully carry out experimental work. All of the researchers from Asian countries now have English as a second language. As well, some researchers have gained skills in analysing experimental results.



Liver fluke risk: animals drinking water from contaminated ricefields.

Characterising high resistance to internal parasites in Indonesian thin-tailed sheep

Internal parasites *Haemonchus contortus* and tropical liver fluke *Fasciola gigantica* adversely affect ruminants in Asia and Africa. Infection of animals with these parasites leads to a decrease in productivity. An earlier ACIAR project confirmed that Indonesian thin-tailed sheep have a high level of innate and acquired resistance to infections due to *F. gigantica* and considerable resistance to *H. contortus*. This project aimed to determine the genetic basis of the resistance of Indonesian thin-tailed sheep to *F. gigantica* and *H. contortus*. Scientists studied the

immune mechanism responsible for resistance in order to identify candidate genes.

The project developed leading edge techniques that were subsequently transferred to Indonesia. The achievements of the project are measured by its excellent scientific output. Most of the scientific milestones were met, but further analysis of the F2 populations is under way to better understand the genetic basis of *F. gigantica* resistance.

A major scientific outcome has been evidence of a gene strongly linked to the expression of *H. contortus* resistance and three possible gene loci for resistance to *F. gigantica*. These findings are of considerable significance and interest. A by-product of the project has been the identification of gene loci important to wool growth and carcass traits such as growth and composition. Currently, large amounts of research funding in Australia are spent on these production topics without producing the results that this project has already achieved. This information is considered of potential value to both the Indonesian and Australian livestock industries.

Helping ruminants to gain more from thornless acacias as food

In sub-Saharan Africa, the extensive grazing areas of northern Australia, and the drier regions of Asia, poor quality feeds are the primary constraint to increased livestock production. Nutrient deficiencies in unimproved native pastures and crop residues can be alleviated by supplementation with fodder trees and shrubs. But problems have been increasingly encountered with sustainable production of leucaena for fodder, and the thornless acacias (*Acacia angustissima*, *A. vilosa* and *A. boliviana*) may be a favourable substitute because they tolerate the acid soils that are common in many parts of sub-Saharan Africa and have no known pests. However,

the drawback to adoption of the thornless acacias as fodder trees is that they contain several anti-nutritional compounds, including some toxins, making them less digestible for many ruminants.

But some ruminants are able to detoxify anti-nutritional compounds through ruminal degradation. Therefore, this project aimed to screen a collection of thornless acacias for the most nutritious and least toxic accessions, to identify the predominant toxins and other possible anti-nutritional factors present in the leaves and seek ruminal bacteria that were able to metabolise them to harmless compounds. Importantly, the project aimed to enhance the capacity of the International Livestock Research Institute (ILRI) to undertake rumen ecology research.

The original hypothesis that the nonprotein amino acids (NPAA) were responsible for the toxicity was justified, based on the published literature. However, the researchers demonstrated that the NPAA are not the primary toxins and that proanthocyanidins and other lower molecular weight phenolics are involved. Later research in the project concentrated on the presence and toxic properties of flavone glycosides but higher molecular weight phenolics also require attention.

A great deal of the research centred on rumen ecology as related to the feeding of thornless acacias and the toxicology of the plants and some of their constituents. The effort to build research capacity in rumen ecology at ILRI-Ethiopia has been very successful. Parallel with this work, much new information on the molecular taxonomy and chemical composition of the thornless acacias was gathered. Many students have been trained and scientific papers are either published or near to submission.

Although the project has generated much new information about *A. angustissima* these data have not as yet furthered its adoption as a fodder species. More research is needed to

determine the full range of toxic and anti-nutritional compounds present in this species, since its use as a fodder shrub in both eastern Indonesia and in Zimbabwe would benefit from the development of a microbial inoculum that detoxifies these compounds.

Helping to manage the barramundi fishery in the Fly River and adjacent coast of Papua New Guinea

The collapse of the barramundi fishery in Western and Gulf Provinces of PNG in 1985 led to a loss of both food and income for coastal and island communities. Rehabilitation of the fishery is a priority for provincial and national governments. An earlier ACIAR-funded small project initially identified serious gaps in knowledge about the fishery. This project has attempted to fill those gaps through studies of the biology, ecology and socioeconomics of the barramundi fishery. The ultimate objective has been to assist with the development of a draft Barramundi Fishery Management Plan for the Fly River and adjacent coastal community.

Conclusive genetic and biological evidence was found to demonstrate that there is only one stock of barramundi living in the Fly River and associated coastal waters. The stock extends into Irian Jaya, thereby constituting a cross-border resource, but it differs from barramundi found



Rehabilitation of PNG's barramundi fishery is a priority for provincial and national governments.

in the far east of PNG. This finding was unexpected, based on the predictions from studies conducted in Australia.

Researchers constructed a computer model of the fishery, predicated around searching for a combination of effort controls (size limits, mesh sizes and closed seasons) that would lead to the most efficient use of the available resource. It will be used to investigate how the fishery might respond to variations in distribution of fishing effort among the different communities.

Curbing the ravages of *Hypsipyla robusta* on species of Meliaceae

Hypsipyla robusta is a highly damaging forest insect pest, in terms of both level of attack per individual tree and percentage of trees attacked in each plantation. In this project scientists evaluated a wide range of species of Meliaceae for genetic resistance to *Hypsipyla*, and investigated whether silvicultural manipulations could improve the situation. They found no outstanding seedlots of *Toona ciliata* in terms of resistance to *Hypsipyla* but there is some possibility that individual genotypes may prove to have some resistance.

Also, some seedlots were ranked in the top ten across several of the countries and these, plus a small number of well-performed individual trees could form the basis of further research and demonstration trials. Some seedlots of non-*Toona* species such as *Chukrasia* and *Khaya* in some countries have potential for promotion for future plantings because of their stronger growth, lower attack by *Hypsipyla* and their ability, particularly in the case of *Chukrasia*, to form a vigorous new terminal shoot with a high angle of recovery.

Dealing with climatic risk in African farming

This project was designed to develop and test a set of tools and methods that would enhance farmer understanding and adoption of improved crop management strategies in environ-

ments subject to significant climatic variability and risk. Farmers can now learn quickly through the use of simulation models and other new information technology, which depict the complex and long-term processes of production systems in easily understood ways. Simulation can be used to explore categories of risk identified by farmer groups or NGOs during participatory appraisal. It can also be used to compare the longer-term consequences and the risks associated with continuing farmers' current practices versus introducing alternatives developed by farmers or researchers.

This form of experience can be tailored closely to farmer circumstances. A capacity for this kind of simulation was considered highly suited to African researchers, NGOs, and other purveyors of improved agricultural practices in their quest to meet the needs of resource-poor farmers in the region. This project served as a bridge between research and development, linking CIMMYT's research on maize, soil fertility and resource management with national adaptive research and technology transfer capacity in Zimbabwe and Malawi. It employed the Australian-developed APSIM (Agricultural Production Systems Simulator) in an adaptive research mode for technology testing and farmer experimentation in the two countries.

Project reviewers noted that given the complexity of African farming, researchers can only model the principal components of the system. However the project should develop a protocol for testing the APSIM model against actual farm-level soils and productivity data, and since the on-farm research work suggested that both manure and phosphorus were key to farmer constraints and decision-making, these two components should be integrated into the ongoing validation work. They stressed the vital necessity of having full confidence in the performance of APSIM before exposing farmers to some of the simulation results, in order to ensure credibility in the eyes of farmers. To this end the project was extended a further six months.

Second rodent management conference

In Beijing in 1998 scientists and extension specialists met for the first time at an international conference dedicated to the exchange of information on the biology and management of rodents. From that conference ACIAR published a book on ecologically based rodent management, whose authors were drawn primarily from those who presented papers in Beijing.

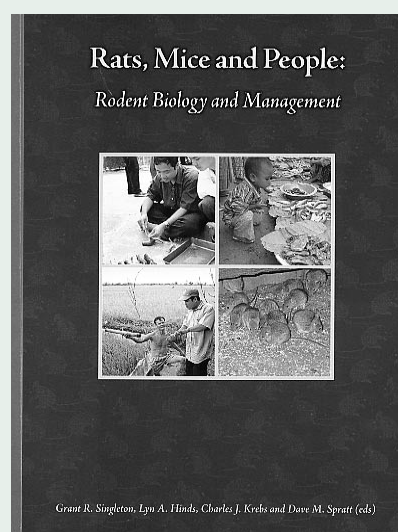
In February 2003 the second international conference was held in Canberra, Australia. The program consisted of a broad array of scientific sessions—from classical taxonomy and systematics to behaviour, from ecologically based management to applied sciences, as well as state-of-the-art research in fields such as biological control and population modeling.

There were nine symposia: Disease; Conservation; Behaviour; Management—field; Population ecology and modeling; Sociology and economics of rodent management; Management

—urban rodents and rodenticide resistance; Taxonomy; Rodent biology—contrasting perspectives. The papers presented at the conference demonstrated that the results from basic research in the biological and social sciences now are exerting a major influence in the battle against the ravages and impacts of pest rodents. Additionally, studies on the conservation biology of rodents have raised the spectre of the ecological services provided by this important group of animals. Such studies enable distinctions between the pest and non-pest status of different rodent species in different geographic areas, and consequent adjustments to control strategies that will ensure a balance between managing pest species and conserving beneficial species.

When planning began for this second conference ACIAR expressed an interest in producing a high quality book that would have international standing. Two referees reviewed each

paper in advance of the conference before it was accepted for publication. The resulting book—Rats, Mice and People: rodent biology and management—was launched during the conference by the Hon. Chris Gallus, Parliamentary Secretary for Foreign Affairs. It reflects contributions from 33 countries and draws on more than 110 papers. Details of the book can be found under *New publications* in this newsletter.



Sydney University forges Vietnam– Australia linkage

A recent two-day workshop hosted by the Faculty of Agriculture, Food and Natural Resources at the University of Sydney has further strengthened ties between researchers in Vietnam and Australia. With support from ACIAR and AusAID's International Seminar Support Scheme the University brought together representatives from the Ministry of Agriculture & Rural Development and Hanoi Agricultural University No. 1 (Vietnam), the International Rice Research Institute (Philippines) and members of the Australian research network.

Eight international speakers and 15 local researchers were officially welcomed to the 2002 Vietnam Workshop by Professor Les Copeland, Dean of the Faculty of Agriculture,

Food and Natural Resources, who has had a long-term interest in Vietnam. This gathering of academics, researchers, policy decision makers and students explored and debated issues of research into recent social and economic development in Vietnam.

Professor Gordon MacAulay, Head of the Department of Agricultural and Resource Economics in the Faculty, has spearheaded an ACIAR project with Hanoi Agricultural University No. 1 (HAU), examining the alternative impacts of agricultural policy on Vietnamese farmers. Research approaches from the three and a half year project were presented to Australian researchers at the first Vietnam Workshop in 1998.

At this second Vietnam Workshop, held in Sydney from 14 to 15 November 2002, 16 papers were presented. Two panel sessions were held to reflect on similarities and differences in experience in approaching policy change in the agricultural sectors of Vietnam and Australia. The workshop provided a forum for researchers to reinforce links both internationally and locally. Local institutions included the Australian National University, the University of Western Australia, Macquarie University and ACIAR.

A final Vietnam Workshop hosted by Hanoi Agricultural University No.1 will take place in Hanoi, Vietnam in November 2003. At this workshop there will be an opportunity to assess the results of the work in detail.

Major projects

ASEM/2001/037 Improving the marketing system for fresh produce of the highlands of PNG

The PNG Highlands region represents a unique environment in which high quality temperate-zone horticultural produce is grown year-round. The region has the potential to meet produce needs of populous coastal cities of PNG as well as to supply offshore markets. The main drawback to fulfilling this potential is an inadequate marketing system, and marketing improvements have been given a high priority in the PNG Government's National Food Security Policy, 2000–2010. Project researchers will map the marketing system and its institutional environment (governmental and infrastructural), identify the constraints and capacities for change, and evaluate the potential for improvement. They will facilitate a process of change, focusing on two particular supply chains—a land/sea chain (bulky, less perishable produce) and a land/air chain (highly perishable, high value produce).

Commissioned Organisation: University of Canberra

Collaborators: *Papua New Guinea* National Agricultural Research Institute; Fresh Produce Development Corporation.

AS1/2001/005 Salinity reduction in tannery effluents in India and Australia

Australia and India share a common interest in processing of hides and skins, and the industry is of major importance to both countries. Tannery wastes, as measured by Total Dissolved Solids (TDS), have been a significant cause of pollution in the past and remain so today. Australian regulators and tanners have acknowledged salinity reduction as a priority research area, and there have been tannery closures in both countries due to increasing public demand for pollution control. The prescribed discharge levels for most of the pollutants are being met except for TDS. Scientists will evaluate and apply systems to reduce salt use in hide and skin preservation and

processing. The overall project aim is prevention rather than treatment and should result in significant reduction of TDS in tannery effluent.

Commissioned Organisation: CSIRO Textile and Fibre Technology

Collaborator: *India* Central Leather Research Institute.

CS1/1998/061 Coconut tissue culture for clonal propagation and safe germplasm exchange

In many countries coconut farmers suffer from decreasing farm productivity, largely due to ageing of palms and natural calamities such as pests and diseases, drought and typhoons. Varieties with higher yields and better environmental adaptations, and varieties that provide high-value products are needed to increase the income of coconut farmers and promote sustainable coconut production. This project will support collaboration amongst Australia, Indonesia, the Philippines, Papua New Guinea and Vietnam, designed to facilitate the safe transfer of coconut germplasm and the propagation of elite cultivars. Scientists will work to develop protocols for the rapid production of clonal, true-to-type cultivars and for improved embryo culture (regeneration of rooted plants from excised embryos). They will also develop techniques for genetic analysis to ensure that plants coming from a variety of sources are true to type. The techniques developed will be made available to germplasm banks in the partner countries.

Commissioned Organisation: University of Queensland, School of Land and Food

Collaborators: *Philippines* Philippine Coconut Authority; University of the Philippines at Los Banos; *Papua New Guinea* Cocoa and Coconut Research Institute; *Indonesia* Research Institute for Coconut Palms; *Vietnam* Oil Plants Institute of Vietnam.

CS1/2000/038 Use and improvement of sugarcane germplasm

Australia and China constantly need new and more productive varieties of sugarcane in increasingly competitive

world markets. Sugar industries invest heavily in breeding programs to maintain a steady flow of more productive varieties, but these programs rely on a relatively small number of key ancestors. Both Australia and China have a strong interest in introgression (the introduction of new sources of genetic material) to broaden the base in breeding programs. In this project scientists will undertake genetic characterisation (via DNA based markers) of an extensive collection of sugarcane-related germplasm collected from the wild in southwest China during the 1980s and 90s. This characterisation will guide sugarcane breeders in selecting for desirable traits such as high sucrose content, cane yield, and drought tolerance. They will introduce the traits by backcrossing selected exotic clones with elite parents and commercial varieties, with the aim of providing materials for core breeding programs in China and Australia.

Commissioned Organisation: CSIRO Plant Industry

Collaborators: *Australia* Bureau of Sugar Experiment Stations; CSR; *China* Yunnan Sugar Research Institute; Guangzhou Sugarcane Industry Research Institute.

FST/2000/001 Impacts of fire and its use for sustainable land and forest management in Indonesia and northern Australia

This project arose from the need to develop relevant policies and policy outcomes, communication and education products that will facilitate and enable the judicious use of fire in sustainable land and forest management. The scientists will determine current and past patterns of fire in a range of strategically located sites in western Indonesia (southern Sumatra, East Kalimantan), eastern Indonesia (Sumba and Flores) and northern Australia. They will review national, state and regional policy frameworks regarding underlying fire management issues and past/current impacts of these policies, and determine positive and negative

impacts of a range of fire management strategies, particularly for forestry. Finally they will employ participatory planning methods to determine appropriate fire management strategies and identify enabling policies that facilitate improved livelihood options for different land-uses, and to enhance land and forest management capacity of stakeholders and associated institutions.

Commissioned Organisation: Northern Territory University, Faculty of Science, IT and Education

Collaborators: *Australia* Bushfires Council of the Northern Territory, *Indonesia* Wira Wacana Christian School of Economics; Center for International Forestry Research; Provincial Development Planning Board for East Nusa Tenggara; University of Gajah Mada.

LWR1/2001/001 Improving main system water management in China: a demonstration project in the Zhanghe Irrigation Scheme

In China an improved framework for the operation and management of irrigation systems is needed to support the adoption of water-saving irrigation in rice production. This small project will complement the aims of another larger ACIAR project designed to help grow more rice with less water. In this instance researchers will focus on the day-to-day operation of the water supply system to better satisfy the on-farm requirements of water saving irrigation, and on the longer term needs of infrastructure modernisation to support the same objective. Researchers will analyse operational strategies, studying the operation of the East Branch Canal and also whole-of-system operation for the entire Zhanghe Irrigation System in China's Hubei Province. Their analyses will help the Zhanghe Provincial Management Bureau to understand the basic operational requirements for the adoption of water saving irrigation at the farm level and to design an operational model that is appropriate to support its adoption.

Commissioned Organisation: University of Melbourne, Faculty of Engineering

Collaborator: *China* Wuhan University.

LWR1/2002/018 Regional impacts of re-vegetation on water resources of the Loess Plateau, China, and the Middle and Upper Murrumbidgee Catchment, Australia

In China and Australia large-scale re-vegetation using perennial plants (grasses, shrubs and trees) is currently under way, and more is planned. The principal reason for re-vegetating the hilly parts of the Loess Plateau region of western China is to reduce soil erosion and thus improve water quality of the Yellow River. In Australia the aim is to reduce excess water entering regional groundwater systems, to 'dry' landscapes and hence reduce the impact of salinity and waterlogging. However, in both countries the impacts of large-scale re-vegetation on broad-scale hydrology are poorly understood. This project proposes to develop spatially distributed models so that re-vegetation can be better targeted to the most appropriate places. Scientists will develop a spatial information system to assist policy makers in this targeted selection process. In China, the objective is to develop a suitable spatially distributed model that policy makers can access through the World Wide Web. In Australia, the objective is to determine to what extent re-vegetation has a buffering effect on episodic groundwater recharge, given Australia's high climate variability.

Commissioned Organisation: CSIRO Land and Water

Collaborators: *China* Chinese Academy of Sciences and Ministry of Water Resources, Institute of Soil and Water Conservation.

LWR2/2000/046 Overcoming magnesium deficiency in oil palm crops on volcanic ash soils of Papua New Guinea

In West New Britain—the main area of oil palm production in PNG—palm oil production on new volcanic soils in high-rainfall lowland areas suffers

seriously from a type of magnesium deficiency that has proved difficult to alleviate. The problem appears to lie in the chemistry of these volcanic soils (Andisols) in combination with the high annual rainfall (>3000 mm pa). Project scientists will work with the Oil Palm Research Association (OPRA) in New Britain and elsewhere to test novel ways of applying sources of slowly available magnesium while they survey the extent of the soil problem. They intend to further elucidate the underlying soil and plant chemistry, and train OPRA scientists in appropriate analytical techniques. Smallholders produce a significant proportion of the palm oil in the region (they have 50% of the oil palm area), thus they too should benefit as much as the plantation (estate) sector from an economic solution to the magnesium-deficiency problem.

Commissioned Organisation: CSIRO Land and Water

Collaborator: *Papua New Guinea* Oil Palm Research Association.

PHT/2001/016 Microbial contaminants associated with sago processing and storage in Papua New Guinea

The area under sago palms in Papua New Guinea is in excess of 1 million hectares. Sago harvesting and consumption form an important part of subsistence agriculture and sago is the staple diet in selected areas of PNG. However, this resource is under-utilised and does not contribute as much as it might to food supply security in the country, partly because of health risks associated with consumption of the processed products. Health risks are of two related types: the first relates to the presence of mycotoxins in the starch (causing haemolytic disease); the second to contamination of the food with pathogenic bacteria and viruses (leading to food poisoning). This project will determine the causes and extent of health risks to consumers from contamination of village-produced sago, then identify options for reducing those risks and improving marketability of the processed sago.



Commissioned Organisation: James Cook University, School of Biomedical Sciences.

Collaborators: *Australia* Queensland Department of Primary Industries, Animal Research Institute; *Papua New Guinea* University of Technology, Department of Applied Sciences; University of Papua New Guinea, School of Humanities and Social Sciences.

Medium projects

LWR2/2001/038 Management of animal waste to improve the productivity of Pacific farming systems

Evidence from many Pacific island communities suggests that a lot of manure, particularly pig manure, accumulates per unit land area, and that lack of proper management of this accumulation adversely affects the communities. For instance, contamination of potable water underground in atolls or in catchments in high islands leads to diseases in humans such as gastric disorders and even Leptospirosis. This project will engage young professionals from the University of the South Pacific to survey several selected villages in each of the four collaborating countries (Fiji, Tonga, Tuvalu, Kiribati), in order to determine current manure management practices and cultural attitudes towards manure. In the light of this information, scientists and the people from the selected communities will work together to identify practical ways of improving management (in particular safe processing and utilisation of manure on gardens and crops but not excluding regulatory solutions). After this, the scientists will field-test agreed improved strategies in a subset of the communities in each country, and disseminate information about successful outcomes.

Commissioned Organisation: University of Western Sydney, School of Environment and Agriculture

Collaborators: *Fiji* Secretariat of the Pacific Community; University of the South Pacific.

Small projects

AS2/1998/090 CD-ROM development: efficient pig management in tropical Asia

IAP/2002/053 Impact assessment of ACIAR projects on wheat rust resistance

Multilateral projects

CS1/2000/002 Development of advanced technologies for germplasm conservation of tropical fruit species

Conservation of many tropical fruit species is often difficult or impossible by traditional methods as many species have recalcitrant seeds (they do not tolerate drying and so cannot be stored in the standard way). Other species may have no natural seed dormancy, their seeds may have only a short life span, or they may not produce any seeds. Conservation of genetic resources of these species is extremely important but efficient and appropriate methods for their long-term and sustainable conservation are not available. This project will develop new techniques to conserve the germplasm of selected tropical fruits and related species. The major objectives of the project are to develop cryopreservation methods (storage at ultra-low temperatures) for priority species, to develop alternative conservation and regeneration strategies, and to disseminate proven technologies to researchers and other users in the region.

Commissioned Organisation: International Plant Genetic Resources Institute, Malaysia

Collaborators: *Australia* Griffith University; *Thailand* Department of Agriculture; *Vietnam* Institute of Agricultural Genetics; *Philippines* University of the Philippines at Los Banos; *Malaysia* Universiti Kebangsaan Malaysia.

FST/1999/035 The impact of changing agroforestry mosaics on catchment water yield and quality in Southeast Asia

In many developing countries scarcity of land has produced a steady migration of settlers to farm forested

uplands. These settlers have come into serious conflict with downstream water users (irrigation, industry and urban) because of real or perceived impressions of lower quality water and reduced flows from catchments. The response of most governments has been to restrict agriculture in critical catchments and/or to evict farmers, at considerable economic and social cost. The aims of this project are to characterise current land-use, look for trends in land-use change in selected watersheds, and determine how changes (including seasonal changes) affect filter functions and impact on water quantity and sediment load. The scientists will test the effectiveness of existing filter elements, incorporate the data into spatially explicit models of soil and water movements in landscape mosaics at catchment scale, and quantify the trade-off between watershed functions and profitability of land-use for current and possible future land-use mosaics. There will be some participatory exploration of alternative practices.

Commissioned Organisation: International Centre for Research in Agroforestry, South East Asian Regional Research Program, Indonesia

Collaborators: *Australia* CSIRO Land and Water; Australian National University; *Indonesia* Bogor Agricultural University; Lampung University, Forest and Nature Conservation Research and Development Centre, Center for Soil and Agroclimate Research Brawijaya University; *Thailand* Chiang Mai University; *Singapore* National University of Singapore.

IAP/1999/082 The impact of research on poverty reduction

Poverty alleviation has been adopted as one of the three central objectives of the CGIAR, the other two being productivity enhancement and natural resources protection. As a response IFPRI has developed and coordinated a systemwide project to assess the poverty impacts of technologies

New publications

developed by the CGIAR. This has involved two phases: the first undertook a review and synthesis of the literature on the links between agricultural research and poverty; the second phase is now undertaking a series of case studies derived from Phase 1, to ascertain actual impacts of the research on the poor. ACIAR has provided funding for both phases of the project.

Commissioned Organisation:

International Food Policy Research Institute, USA

Collaborator: United Nations Development Programme, Global

LWR2/2002/028 Stress tolerant wheat and maize for Afghanistan: Seeds of strength

Afghanistan, with 25 million people, has only approximately 3.7 million hectares of cropland. Despite most of the population being engaged in agriculture, the country has only just managed food self-sufficiency in the best of recent times. Autumn-planted wheat is the main crop (70% of the crop area) while summer maize occupies about 10%. This project aims at short- to medium-term support to wheat and maize production in Afghanistan, achieved principally through the immediate importation of seed of suitable cultivars, the establishment of on-farm participatory testing of the imported seed to identify the best adapted cultivars, then local multiplication and distribution of improved cultivars. Particular attention will be paid to yellow rust resistance in wheat and to promoting improved agronomy along with improved cultivars. The project will be undertaken through a CIMMYT scientist based in Kabul working closely with major NGOs and State scientists. CIMMYT wheat and maize scientists based in West Asia will provide backup.

Commissioned Organisation:

International Maize and Wheat Improvement Centre, Mexico.

ACIAR's distribution policy is to provide complimentary copies of its publications to developing country libraries, institutions, researchers and administrators with an involvement in agriculture and to any scientist involved in an ACIAR project.

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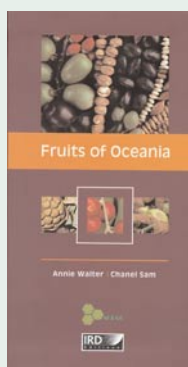
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Monographs

Fruits of Oceania



and felt it was highly desirable to have such a wealth of information available in English. The book covers fruits and nuts eaten from Papua New Guinea to the Cook Islands, with common, vernacular and scientific names. Additional information is provided through photos, botanical illustration and distribution maps.

This highly illustrated book was originally produced in French. ACIAR Research Program Manager Paul Ferrar first saw the French version at a conference on Pacific nuts held in Vanuatu

Walter, Annie and Sam, Chanel 2002 (translation Paul Ferrar from Fruits d'Océanie). ACIAR Monograph No. 85, 329 p. Price: \$A90.00 (plus postage and handling).

Improving Indonesia's Beef Industry

This report summarises the outcomes of an extensive field survey conducted in the major beef-producing and beef-consuming provinces in Indonesia. Quantitative information gained was used to construct a detailed value chain of cattle production through to processing and final consumption. This is the first time a quantitative framework has been developed to analyse beef industry issues in Indonesia. The framework enables advisers to identify and prioritise the reforms needed to improve growth prospects and contribution of the beef industry to the Indonesian economy.

Hadi, P.U, Ilham, N., Thahar, A., Winarso, B., Vincent, D. and Quirke, D. 2002. ACIAR Monograph No. 95, vi+128 p. Price \$A15.00 (plus postage and handling).

Rats, Mice and People: Rodent Biology and Management

CSIRO Sustainable Ecosystems and the Central Research Institute for Food Crops (CRIFC) Indonesia jointly hosted the second International Conference on Rat Biology and Management in Canberra Australia from 10 to 14 February 2003. ACIAR was the major sponsor. All the papers published in this book were presented at the conference, and their order is based around the program's nine scientific sessions. Before being accepted for publication each paper was reviewed by two referees. An important theme to emerge from the conference was that the lives of rats, mice and people are often interwoven, and scientists and extension staff alike must take account of this relationship in developing ecologically based strategies for management.

Singleton, Grant R., Hinds, Lyn A., Krebs, Charles J. and Spratt, Dave M. 2003. ACIAR Monograph No. 96, 564 p. Price \$A50 (plus postage and handling).

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Around ACIAR

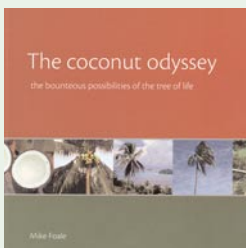
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Effects of Globalisation and Economic Development on the Asian Livestock Sector

The livestock production systems in Asian developing countries comprise a mix of capital-intensive large-scale commercial operations and labour-intensive smallholder peri-urban and crop-livestock operations. Over the next few years, growth in demand for livestock products and WTO-mandated trade liberalisation will impact significantly on these systems. This report analyses the impacts of these likely developments on the performance of beef, pigmeat, poultry and dairy systems in China, India, Indonesia, Vietnam, Philippines and Thailand. Global economic models of livestock production and trade are used to project outcomes for each livestock sector and country.

Quirke, D., Harding, M., Vincent, D. and Garrett, D. 2003. ACIAR Monograph No. 97e, 149 p. Price \$23.00 (plus postage and handling).

The Coconut Odyssey: the bounteous possibilities of the tree of life



ACIAR's support for coconut research began in 1983. This support continues

today with the commencement of a new ACIAR coconut project at the University of Queensland. This timely publication summarises the case for coconut: it describes its potential and benefits that may be realised for health, food and the environment. It also comes at a time when the International Coconut Genetic Resources Network (COGENT) is determining future strategy for the long-term conservation of coconut genetic resources, and their use in a global program of coconut research and development activities.

Foale, Mike, 2003. ACIAR Monograph No. 101, 132p. Price \$25.00 (plus postage and handling).

CSIRO, IRRI and ACIAR honoured for rodent research

The Rodent Research Team of CSIRO led by Dr. Grant Singleton, the Rodent Ecology Work Group at IRRI, led by Dr. K.L. Heong and Dr. John Copland of ACIAR were co-recipients of the Partnering Excellence medal awarded by CSIRO. Dr. Singleton received the medal on behalf of the three organisations at Parliament House, Canberra on 10 December. The medal was awarded for excellence in providing international leadership, scientific expertise, and training in ecologically based management of rodent pests in Australia and Asia, through building quality partnerships.



Project leader Dr Grant Singleton (l) and ACIAR Research Program Manager Dr John Copland after receiving the Partnering Excellence medal at Parliament House Canberra.

Honour to ACIAR project leader

Dr Neil Turner, Chief Research Scientist at CSIRO Plant Industry, has been elected a Fellow of the National Academy of Sciences in India, in recognition of his contribution to Indian agronomy through postgraduate training and research over the past 25 years.

'I extend Neil my congratulations,' said ACIAR Research Program Manager Colin Piggitt. 'These awards are not given out lightly and it is a well-deserved recognition of his contribution to research and training of scientists in India over a long period. ACIAR is privileged to have project leaders of his high calibre, who are making a tremendous contribution to solving the constraints and improving the productivity of agricultural systems in the developing world.'

Awards on Australia Day

Congratulations to ACIAR staff members Tony Fischer and Peter Lynch, who both received an Achievement Medallion on Australia Day, January 26th. This Award goes to employees of the Australian Public Service whose efforts and high standards of work set a good example to their colleagues and/or to those who participate with distinction in local or community organisations.

Further congratulations to former ACIAR Research Program Manager Bruce Champ, who became a Member of the Order of Australia (AM) in the Australia Day Honours List. His citation states: 'For services to agricultural research and entomology, particularly through the development of stored grain insect control'.

Farewell Allison—Hello Lydia

Allison Pang, Administration Manager in ACIAR's China Office for the last two years, has left to study at the University of Toledo in the USA. We wish her all the best as she makes the transition and begins her course of study.

Ms Li Xin (Lydia to all in the Beijing Embassy) will succeed Allison as

Administration Manager. She has worked in the Embassy for some time, starting as a junior telephonist and rising quickly to a more senior position. 'She is highly respected and will make a wonderful contribution to our efforts in running and maintaining the Beijing Office,' says ACIAR Manager Chris Brittenden.