

June 2002

ACIAR Newsletter Number 40



# Newsletter

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Mr Peter Core, the newly appointed Director of ACIAR.

## Minister announces new ACIAR Director

On May 20 the Minister for Foreign Affairs the Hon. Alexander Downer named Mr Peter Core as the new Director of ACIAR. Mr Core, who is currently Managing Director of the Rural Industries Research and Development Corporation (RIRDC) in Canberra, will commence his five-year term on 31 July 2002.

Mr Core has established a reputation for strong leadership, the ability to contribute high-level policy perspectives on agricultural research and development, and strong management and communication skills. Notably, he has used these abilities in leading a small agency with similarities to ACIAR.

Mr Core obtained his Masters degree in Economics and his Bachelor's degree in Rural Science from the University of New England. Early in his career he worked for the Organisation for Economic Cooperation and

Minister announces new ACIAR Director continued on page 2



## ACIAR celebrates 20 years

The Monday morning staff meeting at ACIAR on June 3 turned out to be a surprise celebration of the Centre's 20th Birthday. On 3 June 1982 the Australian Parliament enacted its founding legislation, the ACIAR Act.

The usual Monday morning solemnity made way for some frivolity as staff grabbed the opportunity to mark the occasion with party hats, balloons and whistles. And of course there was a cake to follow!

Longest serving staff member Maureen Kenning, who joined ACIAR in 1983, prepared a Powerpoint presentation, a visual history to symbolise the 20 years. Here are some points to ponder from the past:

In June 1982 there were three staff members—Director Jim McWilliam, Centre Secretary Denis Blight and Scientific Advisor Gabrielle Persley. Today there are well over 70, including staff in offices in seven countries.

Our first budget totalled \$200 000—admittedly it was only for the first month. Today our budget exceeds \$46 million.

ACIAR has only had three directors in its 20-year life 1982–1989—Prof Jim



ACIAR staff members celebrate the Centre's 20th birthday at an unusual Monday morning staff meeting.

McWilliam; 1989–1995—Dr George Rothschild and 1995–2002—Dr Bob Clements. The fourth Director, Mr Peter Core, will take office in July (see separate story in this issue).

At the end of ACIAR's first year there were about 60 projects under way. Many hundreds have been commissioned since then, and today there are about 200 concurrent projects.

### Minister announces new ACIAR Director continued

Development (OECD) in its Agricultural Policies Division. In the Australian Public Service he rose to become Deputy Secretary of the Federal Department of Primary Industries and Energy (now Agriculture, Fisheries and Forestry—Australia). Subsequently he served as Secretary (CEO) of two Federal Departments—Transport and Industrial Relations.

He has Chaired the Australian Animal Health Laboratory, the Federal Government's Management Improvement Advisory Committee and the *Innovate Australia*

Agricultural Marketing Program Committee. He was also the Federal Government representative on the Australian Wool Corporation.

Mr Core will succeed Dr Bob Clements, who has been Director since 1995. Dr Clements will leave ACIAR at the end of June and after a well deserved break will take up the appointment as Executive Director of the Crawford Fund for International Agricultural Research. More about his new appointment appears on page 3.

## Correction

### Origin of hybrid leucaenas

On page 1 of ACIAR Newsletter No. 39 we stated that the KX2 hybrid leucaena was developed in an ACIAR project. ACIAR research indeed tested and proved the performance of this outstanding hybrid, but the article neglected to mention that KX2 had its origins at the University of Hawaii.

The Nitrogen-Fixing Tree Research group headed by Professor James Brewbaker applied the designation KX2 around 1988 to the hybrids of *L. leucocephala* and *L. pallida*. The *pallida* crosses were undertaken by Dr Charles Sorensson, prompted by the invasion of *L. leucocephala* by the destructive psyllid insect in 1984.

ACIAR salutes the pioneering work undertaken at the University of Hawaii that is now bringing benefit to rural communities in northern Vietnam.

## Director Bob Clements to lead Crawford Fund

Director of ACIAR Dr Bob Clements, who retires from this position at the end of July, will join the Crawford Fund as its Executive Director later this year. The Crawford Fund is an advocacy organisation dedicated to publicising and promoting the benefits of international agricultural research to developing countries and Australia. It also conducts Master Classes that impart leading-edge technologies to developing-country scientists, many of whom are associated with ACIAR projects.

Dr Clements has led ACIAR since 1995, and prior to that he was Chief of the CSIRO Division of Tropical Crops and Pastures in Brisbane. His experience in both these positions provide an excellent foundation for

this new role. He has been a tireless advocate for ACIAR, travelling widely both in Australia and in most of its collaborating countries, and has given special emphasis to ensuring that research results and their impacts abroad and back home in Australia be acknowledged and documented. He has established a network of scientific and administrative colleagues throughout the world, and they will prove valuable in helping promote the worth of international agricultural research.



Dr Bob Clements, who will leave ACIAR at the end of July and take up his new appointment as Executive Director of the Crawford Fund later this year.



Dr Robyn Alders, the recipient of the Kesteven Medal for 2002, administers Newcastle disease vaccine in an African village.

## Kesteven medal to project leader

Once again an ACIAR project scientist has been awarded the Kesteven medal. This time it is Dr Robyn Alders. She is the first woman to receive the award. The Australian Veterinary Association makes the award annually to an Australian veterinarian who has made a distinguished contribution to international veterinary science through technical and scientific assistance to developing countries.

Dr Alders has worked to control Newcastle disease in village poultry systems in several developing countries. This has involved periods living and working in Zambia and Mozambique, part of that time as an ACIAR project scientist and part of the time as an Australian Volunteer. She has, with the support of the national African governments, helped to produce and test experimental

vaccines in both countries, and provided education and training to many local scientists and technicians. Testing of vaccine containing the I-2 strain of ND in Mozambique has led to large-scale production of I-2 vaccine for that country. The vaccine, developed with colleague Professor Peter Spradbrow, has been administered to literally millions of poultry, bringing benefit to countless villages in Africa and Asia.

She is currently as an Australian Volunteer International and FAO consultant working with countries in Asia and Africa, undertaking trials of I-2 vaccine with non-government organisations and the International Fund for Agricultural Development. She has also made major contributions to the production of extension materials, including two publications recently produced by ACIAR—a field manual and a training manual for controlling Newcastle Disease in village chickens. A third one on laboratory practice is about to be published.

### Project extended to improve disease control in Laos

ACIAR has extended for a second time a project to improve diagnostic and control measures for livestock diseases in Laos. The project commenced in July 1997 and this latest extension means it will run until approximately December this year.

CSIRO Livestock Industries' Australian Animal Health Laboratory (AAHL) has managed the project. It had a major involvement from Stuart Blacksell, a volunteer with Australian Volunteers International (AVI), who was based in Vientiane for the entire period of the project. So far the project has achieved the following results:

Establishment of the first animal health virology laboratory in Laos

Training in diagnostic techniques and laboratory practice for scientists from Laos and Yunnan province in China

Extensive studies on Classical Swine Fever (CSF) which demonstrated its wide distribution within Laos

Additional surveillance programs in Laos for bovine brucellosis, Aujeszky's Disease, Porcine Respiratory and Reproductive Syndrome (PRRS) and Johne's disease

Susceptibility studies for Laos' indigenous pig, the Moo Daeng, for foot-and-mouth disease (FMD) and CSF.

AAHL project manager, Dr Laurie Gleeson, says the surveillance programs revealed that CSF was widespread and in many production systems. About 25 per cent of severe disease outbreaks in pigs were caused by CSF and two distinct genetic types of the virus were found. The indigenous Moo Daeng pig was found to be as susceptible to CSF as European pig breeds.

'The abattoir monitoring did not detect evidence of Johne's disease in cattle and buffalo. PRRS was not detected, but in some areas there was a high prevalence of Aujeszky's disease in pigs,' he says.

'This information is vital to informing the design and delivery of veterinary services and disease responses, and quarantine policy,' Dr Gleeson says.

The objectives of the new phase of the project will be to implement prevention and control strategies for CSF in Laos villages, and to complete investigations into recent outbreaks of FMD in the north of Laos.

The project will also allow the evaluation of serological tests for FMD that were used during the FMD outbreak in the United Kingdom. This competitive enzyme linked immunosorbent assay (c-ELISA)



Scientists undertake some benchwork at the animal health virology laboratory in Vientiane, the first of its kind in Laos.

format is simpler and quicker to use than the existing gold standard test.

'Through the project we will run enough tests to evaluate the usefulness of the c-ELISA test for use in laboratories in Southeast Asia,' Dr Gleeson says.

'The project benefits Australia as well as Laos and Yunnan province, because it improves our knowledge and understanding of these diseases. Better control of animal diseases in the region also helps to reduce the risk of them spreading. Animal health issues are important to national development, and so the project contributes to Australia's overall assistance programs,' concluded Dr Gleeson.

For further information contact Dr Gleeson on +61 3 5227 5038 or email: [laurence.gleeson@csiro.au](mailto:laurence.gleeson@csiro.au)

### Chicken virus vaccine to provide dual benefit

The poultry industries of Australia and Indonesia will benefit from the development of a cheap and effective vaccine, and a diagnostic test, for virulent strains of infectious bursal disease virus (IBDV), also known as Gumboro virus.

The vaccine and diagnostic test will be developed as part of a new CSIRO Livestock Industries research project, supported by the Australian Centre for International Agricultural Research (ACIAR).

CSIRO scientist and project leader, Dr Jagoda Ignjatovic, said virulent IBDV strains caused large numbers of deaths in infected chickens.

'In Indonesia, nearly every village household raises chickens, which are an important source of meat, eggs, and income,' she said. 'In terms of economic impact, this virus is the second most important virus of chickens in Indonesia. In 1991, IBDV nearly wiped out their industry.'

'Australia, on the other hand, is one of the few countries that are free from virulent IBDV. The arrival and spread of such strains in Australia would be a significant threat to the profitability and sustainability of our poultry industry,' said Dr Ignjatovic.

The aim of the project is to develop an effective vaccine against the virulent strains, which could be manufactured cheaply by a local supplier.

## Soybean trials identify promising variety

In Vietnam the cultivation of soybean is gaining in popularity. With the falling price of rice, farmers are being encouraged to diversify to other crops, and soybean has been identified as a major crop for rapid expansion between now and 2005. Vietnam currently uses 1 million tonnes of soybeans, mostly for animal feed, and about 80% of this is imported. Only about 150 000 hectares are grown, and the intention is to expand to about 500 000 hectares, mostly in the Mekong Delta and the northern mountainous regions.

An ACIAR project (CS1/1995/130 Soybean variety adaptation and improvement in Vietnam and Australia) has been under way since mid 1999. ACIAR Country Manager Greg Banova and Assistant Country Manager Duong Huong Ly visited the Vietnam Agricultural Science Institute (VASI) in Hanoi on Friday 31 May to hear about the latest project developments. Dr Ngo Quang Thang, a key researcher at VASI working on the project, advised that an Australian variety, No. 95389, has proven to be the best variety all round. Field trials have been conducted in Thai Nguyen, a northern mountainous province about 2–3 hours north of Hanoi. These were conducted by Mrs Phan Thi Thanh Truc of Thai Nguyen

University of Agriculture and Forestry under the supervision of the project leader, Dr Tran Dinh Long.

Australian project leader Andrew James writes: 'The soybean variety 95389 is a long juvenile backcross to the Thai variety Nakhonsawan #1. It originated in the ACIAR soybean improvement projects in Thailand and Vietnam. We judged that it would be successful in Vietnam because it has near photoinensitivity at those latitudes but medium duration. It therefore overcomes two of the productivity constraints, i.e. 1) medium duration gives higher yields and higher tolerance to variable environmental conditions than the extreme-short duration currently in use and 2) near photoinensitivity means that it can be grown in the spring, summer and winter seasons—important in a country without good seed storage facilities and distribution network.'

Notable features of the variety:

- Extensive higher and stronger growth than others—average height around 40–50 cm, strong stem, more resistant to damage by wind.
- Extensive higher yields—2.5–3.0 tonnes per hectare, compared to others yielding around 1.5–1.8 tones per hectare

Dr Ignjatovic and her team will also evaluate the effectiveness of the diagnostic test in Indonesia, under field conditions where the virus is already present.

'As well as assisting our near neighbour, Indonesia, this project has clear benefits to Australia by helping to control the virus on our doorstep, and improving our preparedness in case of an incursion of the strains into Australia,' she said.

Within Indonesia, Dr Lies Parede and her team at the Veterinary Research Institute (BALITVET), Bogor, will work on the project in collaboration with CSIRO.

For more information, contact Dr Jagoda Ignjatovic on +61 3 5227 5769 or jagoda.ignjatovic@csiro.au

**Emma Homes**  
**CSIRO Australian Animal Health Laboratory**



Mr Thang, Vietnamese project leader of the ACIAR soybean improvements project, holds up a sample of No.95389, which was imported into Vietnam in the course of the project and has proven in field trials to be the best variety all round.

- Extensive grows well in three seasons—spring, summer, and winter, with best results in the highlands in summer and the lowlands in winter.
- Extensive shows high resistance to the two main pest and disease problems normally encountered in soybean cultivation (mildew and stem borer).

Potential yields are even higher if more intensive methods are adopted. Best prospects for growing this variety are in the Mekong Delta and Red River Delta, especially red soils in upland areas (600 m altitude) around Thai Nguyen and Bac Can. Most immediate plans are to grow 600 m<sup>2</sup> at the VASI facility in Hanoi and 100 m<sup>2</sup> in Ha Bac in the summer. Researchers aim to multiply the seedlings through summer in time for planting the winter crops in the Red River Delta. The new variety will be provided free to farmers located in different ecological zones on an experimental basis.

ACIAR Research Program Manager Colin Piggitt is excited about the progress: 'This looks like the start of a very positive impact from the project,' he said.' It is great confirmation of the wisdom of initiating the research and of the industry in conducting the project, also an affirmation that Australia's soybean R & D skills are world class. We have become aware that Vietnam is very keen to expand soybean production, and these project outputs will certainly help that cause.'

## Rodent program achievements expand

### ACIAR's rodent control achievements feature at Indonesia's National Rice Week

Indonesia's 1st National Rice Week, coinciding with the 20th anniversary of the foundation of the Research Institute for Rice in Sukamandi, was held in the first week of March. Rice Week was instituted to promote research in rice production and crop protection, to assist policy makers in planning rice production, crop protection and research, and to inform extension officers and farmers of techniques in rice production and crop protection. It was therefore an opportunity to showcase the research achievements of the ACIAR-funded project to control rats in rice crops

The President of Indonesia, Megawati Sukarnoputri and the Minister of Agriculture, Dr Bungaran Saraghi opened Rice Week in the presence of 2500 policy makers, researchers, university staff, students and farmers.

The rodent group of RIR presented their work in a poster 'Technologies to control rice-field rats' at a scientific workshop attended by representatives from all Indonesian provinces, the Rice Institute for Rice (RIR) and many universities. Extension staff and farmers took away approximately 500 A4 versions of the poster. Rodent group staff also presented rodent control techniques developed in the ACIAR project in an exhibition aimed to distribute knowledge on rice crop protection.

The President of Indonesia, the Minister of Agriculture, AARD staff and many farmers attended a field day, where rodent group staff demonstrated the use of the trap barrier system (TBS) for rodent control. Officials and farmers were highly interested in the TBS technique. As a result the Chairman of the central board of the national farmers association (HKTI) ordered 1000 multiple capture traps for distribution to several Indonesian provinces.

This is a great lead-up to the 2nd Conference on Rodent Biology and Management to be held in Bogor, Indonesia in October/November 2002 (details below).

**Second International Conference on Rodent Biology and Management (ICRBM)**, 28 October to 1 November 2002. To be held at the Novotel Coralia Bogor Resort, Indonesia. ACIAR is a sponsor of this conference and there will be major contributions from researchers involved in project AS1/1998/036, *Management of rodent pests in rice-based farming systems in Southeast Asia*.



Photo: The President of Indonesia, Megawati Sukarnoputri, inspects multiple capture traps and two posters by the Research Institute for Rice rodent group about the trap barrier system (TBS) technology.

Further details are available at [www.icrbm.com](http://www.icrbm.com) or contact [grant.singleton@csiro.au](mailto:grant.singleton@csiro.au)

### Rats controlled in Vietnam's Bac Binh district

Rats damage to between 20 and 100% of rice crops in Bac Binh district, Binh Thuan province since 1998 has caused food shortages for farmers, who make up 85% of the district population. Many households have lived in hunger for years as they received nothing or very little from their rice crops and local government has had to provide them with rice seed to sow new crops. Local people had tried many traditional rat control methods such as hunting, trapping and poisoning, but the rats kept increasing.



Mr. Lim, 52, in Ri Thanh commune said, 'My children were at the risk of dropping out of school as I had hardly managed enough food provision for my family of 9 members. I have one hectare of land that used to produce 5 tonnes of rice per crop. However, I received just 3.5 tonnes of rice since rats hit the rice field.'

In 2000, World Vision started the Agriculture Development Project in Bac Binh district, in order to improve the nutrition standards of children, but the project was affected by the food shortages due to rats. In 2001 World Vision, in cooperation with ACIAR, implemented the Rodent Control Project to help local people improve food security.

After 8 months implementation, the project has succeeded in helping people in Ri Thanh and Phan Hoa communes protect more than 50 hectares of rice, reducing the rats' damage by 40%. World Vision has introduced two methods of rat control with bio-chemical and Trap Barrier Systems. Approximately 1800 rats were trapped in Ry Thanh commune from the five Trap Barrier Systems during the recent crop, and more were killed by the bio-chemicals.

The local people are highly appreciative of the Rodent Control program. As Mr Lim stated, 'It is easy to establish the Trap Barrier Systems. The important things are that we should work together to maintain the



Village people tried without success to control rats in the rice. World Vision, in cooperation with ACIAR, has introduced the Rodent Control Project, helping villagers to substantially reduce rat damage.

traps and to plant our crops at the same time. World Vision has trained us to apply the methods and become confident in implementing them.'

The provincial People's Committee and Department of Plant Protection has now requested World Vision to introduce the methods into every district in the province. They are confident that the campaign will be most effective if the methods are applied comprehensively. World Vision is now conducting training in

six districts of Binh Thuan province and helping people to apply the new methods.

**Vu Thi Le Thanh**  
World Vision Vietnam

### Workshop to discuss fish feeds in inland aquaculture

A workshop to be held at Siem Reap, Cambodia from 24 to 26 June will discuss how inadequate feeds and feeding practices are constraining

inland aquaculture in Southeast Asia, and how applied research, technology transfer and extension can address these constraints.

ACIAR recently commissioned a review of feed and feeding practices in Mekong River countries. Many common problems were identified and several key priorities emerged.

As a first task of the Workshop participants will discuss feed and feeding problems associated with inland aquaculture in Laos, Cambodia, Vietnam and Thailand. Secondly, key researchable issues will be identified and options to improve feeds and feeding technology through research, training, technology transfer and extension examined. The Workshop will involve country experts, regional organisations, research providers and funding agencies.

Some of the key issues to be discussed include:

- Extensive How to improve the use of fertilisers and supplementary feed ingredients of formulated feeds to increase production.
- Extensive The current and future limitations of trash fish and potential alternatives in different areas.
- Extensive How to improve methods of formulating and preparing supplementary feeds for key species.
- Extensive The potential to increase the use of rice bran in aquaculture diets.
- Extensive How to best improve farmer understanding of feeds and feeding.

The Workshop is being organised by the Network of Aquaculture Centres for Asia (NACA) secretariat with funds provided by ACIAR.

## ACRONYMS and Abbreviations

AARD	Agency for Agricultural Research and Development (Indonesia)	ICRAF	International Centre for Research in Agroforestry
BALITVET	Veterinary Research Institute, Bogor, Indonesia	IFPRI	International Food Policy Research Institute
BIOTEC	National Centre for Molecular Biology and Biotechnology in Thailand	NZODA	New Zealand Official Development Assistance
CEO	Chief Executive Officer	NACA	Network of Aquaculture Centres in Asia-Pacific
CSIRO	Commonwealth Scientific and Industrial Research Organisation	ND	Newcastle disease
DPRK	Democratic People's Republic of Korea	OECD	Organisation for Economic Cooperation and Development
EEZ	Exclusive Economic Zone	PNG	Papua New Guinea
FFA	Forum Fisheries Agency (Pacific)	RIRDC	Rural Industries Research and Development Corporation
ICARDA	International Centre for Agricultural Research in the Dry Areas	TBS	trap barrier system (for rodent control)
ICLARM	International Centre for Living Aquatic Resources Management	VASI	Vietnam Agricultural Science Institute

## Predatory ants put to work to control mango pests

Green ants show promise of having a significant economic and environmental impact in Vietnam, Thailand and other parts of Southeast Asia. These ants are efficient predators of a wide range of insect pests in many tropical fruit crops, but currently they are not being used to any extent to combat such pests.

Farmers in many Asian countries traditionally used colonies of predatory green ants to help control insect pests, but these methods have declined as chemical sprays have gained in use. In 1995 Cashew Australia reintroduced utilisation of the ants into northern Queensland as a biological control agent for the insect pests affecting cashew crops there. Plantations in the Northern Territory picked up the idea in 1997.

Since then the Northern Territory University has conducted more extensive research into the ants, and found similarities between the insect pests affecting cashews and those found on mangoes (mango and cashew are in the same family). This work, and other work done in Indonesia, indicates that green ants can control some of the main insect pests of mangoes. Now an ACIAR-funded project is undertaking a more comprehensive study to determine how the ants might be incorporated into a regime to control mango pests.

Mangoes are an important smallholder and commercial crop in Vietnam, Thailand and other countries of Southeast Asia, and are one of the most important commercial crops in northern Australia. Growers currently rely on regular use of pesticides to control the main insect pests that threaten foliar and floral flush, and fruits.

Preliminary results of experiments in a mix-cropping mango orchard using the ants together with limited applications of insecticides indicate



Green tree ants are efficient predators, making them valuable assets in protecting mango orchards in Southeast Asia and Northern Australia.

that an integrated pest management (IPM) model for mango orchards can be constructed. This model will concentrate on the use of green ants together with farming strategy and selective pesticides.

This project is surveying mango pest populations in the presence and absence of green ants, conducting field observations and laboratory experiments on interactions of the ants with mango insects, and conducting field experiments with transplanted ant colonies. The scientists will develop limited insecticidal treatments to control sap-sucking insects (which the ants encourage rather than attack), and to prevent the ants stinging humans as the fruit is harvested. Apart from scientific results, outcomes from the project will include an instructive video, booklets and a step-by-step flow chart poster to help growers establish an IPM program in their orchards.

Four institutions are involved in the project: Northern Territory University (Australia), Southern Fruit Research Institute (Vietnam), Prince of Songkla University (Thailand) and Department of Agricultural Extension (Thailand).

## ACIAR project set to boost tea plant propagation in Indonesia

Project work undertaken in Indonesia has shown the way forward for Indonesia to replant very large areas of tea. This program is needed because smallholder plantations currently have half the productivity of good estates, and also because many of the current varieties planted are susceptible to blister blight.

The project has shown how to produce large numbers of the most suitable varieties from somaclonal embryos that grow into vigorous, fast-growing plantlets with a strong tap root. The chief breeder at the Tea Research Institute in Indonesia believes these embryos will provide easily the best material for the future. The stage is set to provide an advance that will benefit large numbers of Indonesia's smallholder tea producers.

## Encouraging progress in cattle project

Research Program Manager Bill Winter visited the project 'Developing an integrated production system for Bali cattle in the eastern islands of Indonesia' early this year. He reported that the project is already having genuine financial and social impacts at the farmer level. Project team members spent considerable time understanding the crop/livestock system within which they are operating and identified that simple management changes acceptable to the farmers would bring about improvements in herd productivity.

They have introduced controlled mating and weaning with great effect to the 'treatment' villages that contain about 100 cattle. The farmers set the time for calving to fit with seasonal conditions and the need to use the cows for ploughing. Now that all of the cows are synchronised with the system, over 90% of the cows are pregnant, all calves are weaned at 5-6 months, the time and effort and cost of feeding has been reduced, the farmers are selling bull weaners to generate early cash, and the head man in the village has even sold his bull because a bull will not be needed for 6 months!

By comparison the 'control' village has about 60% pregnancy, calves of all ages and a number of bulls in the herd of varying ages. They use a combination of opportunistic



Bali cattle: simple management changes being introduced through the project are already showing increases in herd productivity.

random natural mating along with the AI service. Pride and overall management of the herd is noticeably lower in this village. They have asked the technician why we are interested in them given that we have nothing to sell. Bill Winter suspects that after one more season they will become the next village to be introduced to the herd management options. If and when this happens, members of the 'treatment' village will play an important role.

## Grouper network grows

The Asia-Pacific Grouper Network, which was established under the ACIAR grouper project (FIS 1997/073), has expanded to encompass all marine finfish culture and is now called the *Asia-Pacific Marine Finfish Aquaculture Network*. The network will now include other species such as seabass, snappers and cobia.

Many of the issues relating to aquaculture development of these species are similar to those with groupers, particularly seed supply and feed development. The Network of Aquaculture Centres in the Asia-Pacific (NACA) has now included facilitation of the network in its work program. The next step will be to formalise participation in the network through commitment of individual institutions.

Users have voted the network an outstanding success. It has created much interest, and is now the basis for establishing other networks (for example, grouper health, reef fisheries and environment).

## Prawn virus detection kit commercialised

A prawn virus detection kit, developed by CSIRO Livestock Industries (CLI) with funding assistance from ACIAR, is proving its worth, with good sales in the six months since an agreement was signed with BIOTEC (National Centre for Molecular Biology and Biotechnology in Thailand) and Farming IntelliGene Tech. Corp. (a Taiwan-based company) for

commercial production and distribution. The kit can detect the presence of gill-associated virus (GAV) and yellow-head virus (YHV), which are closely related. GAV poses a major threat to farmed prawn stocks in Australia, while YHV is a major killer of farmed prawns in Asia.

CSIRO Livestock Industries researcher Dr Peter Walker, who headed the team that developed the kit, said the sales so far were very encouraging. More than 30 kits had already been sold in Australia, Latin America, Thailand, Indonesia, Sri Lanka, Hawaii, Myanmar and Brunei.

'Each kit allows 200 individual tests for the presence of the virus,' he said. 'Sales are expected to increase this year with growing industry awareness of the product. An important application for the kit is sourcing virus-free broodstock, and monitoring virus-free populations to ensure they stay that way.'



## Indian agriculture a big winner from ACIAR project

As reported in *ACIAR Newsletter No. 38*, ACIAR's support of zero till agriculture and management of herbicide-resistant weeds in India is helping to deliver substantial gains in agricultural productivity, farm incomes and the sustainability of agricultural land.

Now an independent evaluation has predicted gains to India of \$1.8 billion over the next 30 years from the adoption of these methods in northwest India. But the eventual gains could be much more than this as the technology spreads through other regions and neighbouring countries.

The project was designed to address a serious weed infestation problem in the rice-wheat cropping system of northwest India—a region containing 3 million hectares of cropping land and

accounting for around 35% of India's wheat production. By the early 1990s the weed *Phalaris minor* had developed resistance to the herbicide used to control it. There was a massive decline in wheat yields—between 30 and 80% on individual farms over an area of 1 million hectares.

New herbicides were introduced as a short-term solution. But these are expensive. Adoption was poor and the development of chemical resistance in the future a certainty. What was

needed was a long-term solution that would be commercially attractive to farmers. ACIAR-funded scientists, working in conjunction with their Indian counterparts, have developed a control package centred around dealing with the phalaris through changes to farming practices, including incorporation of zero tillage cropping.

The result has been spectacular:

- big cost savings in cultivation;
- yield increases through early sowing of wheat;

- better weed control with reduced reliance on herbicides; and
- avoidance of soil degradation and yield declines through continuous cultivation.

The evaluation, undertaken by David Vincent and Derek Quirke from the Centre for International Economics, provides further evidence that the stage is now set for a second 'Green Revolution' in the region.

### First project under way in North Korea

The first project to be developed under a program of cooperation with the Democratic People's Republic of North Korea (DPRK) has now commenced. The project titled 'Legumes and reduced tillage for rice and maize based cropping in the Democratic Peoples Republic of Korea (DPRK)' had its beginnings in a study visit to Charles Sturt University in Wagga Wagga NSW by eight scientists from DPRK in 2001. Details of the project are summarised under 'New projects' in this newsletter.



Indian farmers display some of the simple technology that is integral to the success of the zero till method of wheat cultivation, which is predicted to bring huge gains to Indian and other farming systems in the region over the next 30 years.

### ACIAR Fellows get to know ACIAR

Scholars from partner countries studying in Australian universities under ACIAR's John Allwright Fellowship Scheme do not have regular contact with ACIAR. For this reason Fellows weeks were introduced. Every scholar now has the opportunity to spend a week at ACIAR headquarters in Canberra during his/her time in Australia.

The latest Fellows Week was held in the last week of April. Twelve scholars met the ACIAR staff, members of the Board of Management and some researchers associated with ACIAR projects. The scholars, from eight different countries, concluded that ACIAR



The 12 John Allwright Fellowship holders who attended Fellows Week pause outside ACIAR headquarters in Canberra.

has a helpful and friendly face. As well they benefited from three days of learning about oral and visual presentation, thesis preparation and writing for publication.

## New projects

### Program key

- ADP Agricultural Development Policy
- ASEM Agricultural Systems Economics & Management
- AS Animal Sciences (1 & 2)
- CS Crop Sciences (1 & 2)
- CTE Communication, Training & Extension
- FIS Fisheries
- FST Forestry
- IAP Impact Assessment Program
- LWR Land and Water Resources (1 & 2)
- PHT Postharvest Technology

### Bilateral projects

#### Major

##### **ASEM/2001/036: Maximising the economic benefits to Pacific Island Nations from management of migratory tuna stocks**

Shoals of tuna migrate through the exclusive economic zones (EEZs) of island nations in the Western and Central Pacific Ocean. This migratory characteristic means that no nation has control over the tuna stocks. Stocks in each EEZ depend on harvesting levels, not only in that EEZ but also in other EEZs and on the high seas as well, thus each nation has special problems in managing harvesting effort within its EEZ. The member nations of the Forum Fisheries Agency (FFA) stand to gain the greatest total benefit if they unite to regulate fishing effort or catches by their domestic fleets or by distant water fishing nations. As well, the United Nations Fish Stocks Agreement seeks to set up Regional Fisheries Management Organisations for the conservation and efficient management of migratory stocks. Against this new policy background, this project will identify and promote strategies for Pacific Island Nations to maximise the economic benefits from their migratory tuna stocks.

Researchers will gather fishery data, and undertake economic analysis, bioeconomic modeling and policy development. They will update biological and economic parameters of a model so that it can be used to determine optimal year-by-year changes in access charges and fleet capacities.

**Commissioned Organisation:** La Trobe University, School of Economics

**Collaborators:** *Australia* University of Queensland; *New Caledonia* Secretariat of the Pacific Community; *Solomon Islands* Forum Fisheries Agency.

##### **AS2/1998/035: Ruminant production in the red soils region of southern China & in northern Australia**

Large areas of the red and yellow soils regions of central and southern China have become seriously degraded, largely as a result of excessive deforestation. Three previous ACIAR projects have delivered technologies for establishment and persistence of pasture forages which help control erosion. This new project will attempt to convert these adapted forages into economic and environmental benefit. The scientists aim to develop economically viable pasture-based beef production systems in these regions, in order to meet the rapidly expanding domestic beef market in China and to reduce erosion. Strategies for utilising forages, crop residues and by-products, supported by computer software to predict animal performance, will be developed for China and also tropical Australia.

**Commissioned Organisation:** CSIRO Livestock Industries

**Collaborators:** *Australia* CSIRO Sustainable Ecosystems; *China* Jiangxi Agricultural University; Department of Rural and Social Development; Chinese Academy of Agricultural Sciences.

##### **CS1/1999/064: Lentil and lathyrus in the cropping systems of Nepal: improving crop establishment and yield of relay and post-rice-sown pulses in the terai and mid-hills.**

Lentils, and another legume called grasspea (*Lathyrus sativus*), are widely grown in the lower areas of Nepal. Lentils are of considerable economic and nutritional importance to the country but yields could be improved by finding germplasm better adapted to withstand both waterlogging and drought at different stages, as well as resisting fungal wilt. *Lathyrus* is potentially toxic, and varieties with a lower toxin concentration would be safer for livestock and human consumption. The project will therefore select and propagate improved varieties of both species. Work will also take place in Australia, and any lentil varieties produced will be suitable for Australian conditions.

**Commissioned Organisation:** Centre for Legumes in Mediterranean Agriculture

**Collaborators:** *Australia* Agriculture Victoria; Birchip Cropping Group; Department of Agriculture Western Australia; *Nepal* Nepal Agricultural Research Council; *Syria* International Centre for Research in the Dry Areas.

##### **CS2/1997/079: Integrated control of mango insect pests using green ants as a key element**

Mango growers use chemical insecticides to control mango pests, but with increasing environmental and economic problems. Traditionally in Asia the pests were kept under control by manipulation of colonies of predacious green ants in orchards, and this project seeks to reintroduce the old technology, with adaptive research to improve it. Following success with this approach in cashew plantations, this project will survey mango pest populations in the presence and absence of green ants, conduct field observations and laboratory experiments on interactions of the ants with mango insects, and conduct field experiments with transplanted ant colonies. Limited insecticidal treatments will be developed to control sap-sucking insects (which the ants encourage rather than attack),

and to prevent the ants stinging humans as the fruit is harvested. Instructional material (printed and video) will be prepared, and some farmer field schools will be organised.

**Commissioned Organisation:**

Northern Territory University, Faculty of Science.

**Collaborators:** *Thailand* Prince of Songkla University; Department of Agricultural Extension; *Vietnam* Southern Fruit Research Institute.

**CTE/2000/162: Scientific communication in Papua New Guinea**

The need for training PNG agricultural research scientists in the procedures and techniques for writing and publishing the results of their research has long been an area of concern to government instrumentalities, agricultural research agencies and research funding bodies. While there have been a range of short scientific communication courses organised through various funding bodies for different organisations, these have targeted practising scientists and have not addressed the underlying gaps in initial training causing an on-going lack of confidence in the communication process. The project will attempt to redress the gaps in Scientific Communication training at the undergraduate level, and to further develop the confidence and skills of both scientists in the field and also journalists reporting on scientific issues to non-scientists.

**Commissioned Organisation:**

University of Queensland, School of Natural and Rural Systems Management.

**Collaborators:** PNG University of Papua New Guinea; Papua New Guinea University of Technology; Vudal University College.

**LWR1/1997/150: Salinity management in southeastern Australia, northeastern Thailand and Lao PDR**

Dryland salinity causes major land degradation and economic loss in

Thailand and Australia. Lao PDR currently has only a small area of land affected but there is potential for much larger areas to be affected if they are poorly managed. This project will refine and apply groundwater mapping and modelling technologies to describe recharge and discharge processes in selected catchments of northeast Thailand, central Laos and southeast Australia. The scientists will estimate the relative effect of trees in plantations and other configurations in comparison with alternative land uses on groundwater recharge and discharge. They will also predict the local and regional impact of current and proposed reforestation projects on groundwater hydrology of the selected catchments. In addition, an economic study will highlight the social and economic consequences of the hydrological impacts associated with various reforestation scenarios, and of the increased use of saline groundwater resources within the cultural context of each country.

**Commissioned Organisation:**

University of Technology, Sydney, Faculty of Engineering.

**Collaborators:** *Australia* Hall Resource Economic Modeling; *Laos* Ministry of Agriculture and Forestry; *Thailand* Khon Kaen University; Department of Land Development; Royal Forest Department.

**LWR2/2000/089: Permanent beds for irrigated rice–wheat and alternative cropping systems in northwest India and southeast Australia**

Trials to grow rice in rotation with other crops using a system of permanent raised beds have recently shown promising results in Australia and South Asia. This project will investigate the major management requirements to grow these crops, where irrigation water is only supplied to inter-bed furrows, and rice plants on the beds have a portion of their root systems in unsaturated soil – the soil is never puddled as in traditional rice cropping. The scientists will conduct three major and several corollary

experiments at Ludhiana, Punjab, India and one major experiment in southern New South Wales, Australia. The teams will monitor water, nitrogen and crop performance and adapt soil and crop simulation models to fit the permanent bed system, assisting progress in understanding the key processes of water and nitrogen movement and contributing to development of the new technologies.

**Commissioned Organisation:** CSIRO Land and Water

**Collaborating Institutions:** *Australia* NSW Agriculture; University of Melbourne;

*India* Punjab Agricultural University.

**LWR2/2001/048: Legumes and reduced tillage for rice and maize based cropping in the Democratic Peoples Republic of Korea (DPRK)**

Soil fertility on the arable lands of the DPRK has declined markedly in the last decade as a result of erosion, exhaustive cropping and lack of fertiliser and fuel inputs due to a severe lack of foreign exchange. The country's main crops, rice and maize, are yielding at least 50% below potential in the worst affected areas. This project aims to introduce new technologies to improve input use efficiency and crop yield while reversing the current serious decline in all aspects of soil fertility at two key locations, each with rice and maize cropping, in the western region of DPRK (the major cropping region of the country). The project scientists will identify and test legumes for green manuring and soil conservation in rotation with rice on flat lands, and maize on sloping lands. They will also evaluate reduced tillage for the establishment of both legumes and maize. In southeastern Australia the scientists will test short (one-year) legume leys for forage and/or green manuring in cereal crop rotations, and model their long-term performance.

**Commissioned Organisation:**

NSW Agriculture, NSW Agricultural Research Institute

**Collaborators:** Australia Charles Sturt University; Democratic People's Republic of Korea General Bureau for Cooperation with International Organisations; Ministry of Agriculture; Kim Il Sung University; Academy of Agricultural Science; Pyongyang Agricultural University; Kyeungsang Sariwon Agricultural University.

## Medium

### AS1/2001/054 The identification of constraints and possible remedies to livestock production by zoonotic diseases in the South Pacific

In some Pacific island countries zoonotic diseases (diseases that can be transmitted to humans from animals) are becoming a problem as a result of increasing human and animal density. This project will study three zoonotic infections (trichinellosis, leptospirosis and angiostrongylosis) that have the potential to cause the greatest impact on animal production and human health. The project aims to develop the capacity for effective surveillance of *Trichinella*, *Leptospira* and *Angiostrongylus cantonensis* infection in livestock in Pacific Islands, to determine the prevalence of *Trichinella*, *Leptospira* and *A. cantonensis* infection in livestock in Fiji and Kiribati and the risk factors associated with their transmission, to identify the species of *Trichinella* present in Fiji and Kiribati, and to investigate how diseases arise from *T. papuae* in pigs and from *A. cantonensis* in ruminants. The findings of the project will be used to formulate a regional education and control program for zoonotic diseases and to establish a network on zoonoses.

**Commissioned Organisation:** Murdoch University, Division of Veterinary and Biomedical Sciences, Australia

**Collaborators:** National Agriculture and Quarantine Inspection Service, Papua New Guinea; Secretariat of the Pacific Community, Fiji

## Small

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

IAP/2001/093: Understanding the socio-economic significance of Surra cattle disease in selected communities in Eastern Indonesia

IAP/2001/109: An evaluation of project 'CS1/1996/013 Herbicide-resistant weeds of wheat in India and Australia: integrated management'

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

PHT/1997/161: Market-based analysis of constraints to banana industry development in Indonesia and Australia

## Multilateral Projects

### Restricted grants

#### Large

### AS1/1998/054: Poverty alleviation and food security through improving the sweet potato-pig systems in Indonesia and Vietnam

This project will examine the sweet potato/pig production system in a culturally sensitive and systematic way in Irian Jaya, Indonesia and in Vietnam, using an interdisciplinary approach. Papua New Guinea will be invited to attend coordination meetings and to participate where the research agenda matches that country's priorities. Specific goals are to increase income through improved feed and pig management and to increase food availability and nutrition of sweet potato varieties—using both on-farm and on-station research. Specific tasks are to assess and analyse the two existing types of sweet potato-pig production system (traditional in Irian Jaya and transitional in Vietnam) among other sweet potato-livestock systems within household economies to ascertain the

trend and relative importance of each system. Research should lead to improved sweet potato-based production and stable food and feed supply, with emphasis on dual purpose and forage feed varieties, and drought- or frost-resistant varieties. The project should also help develop improved and integrated sustainable transitional subsistence systems to enhance pig productivity and efficiency of production with an emphasis on marketability.

**Commissioned Organisation:** International Potato Centre (Vietnam and Peru)

**Collaborating Institutions:** Australia South Australian Research and Development Institute; Indonesia Watch Project Jayawijaya; Balai Penelitian Tanaman Kachang-Kachangan dan Umbi-Umbian (Balitkabi); Dinad Peternakan (Jayawijaya Livestock Office); Research Institute for Animal Production; Bappeda (Jayawijaya Planning Office); Vietnam National Institute of Animal Husbandry; Food Crop Research Institute.

### CS1/2000/066: Host resistance, epidemiology and integrated management of faba bean, chickpea and lentil diseases

ACIAR has already supported research to build up the collection of the pulses faba bean, lentil and chickpea germplasm at ICARDA and to develop disease resistance in lentil and faba bean. This project will focus on pulse diseases through collaboration between ICARDA and Australian research institutions. Specific scientific objectives are to study the epidemiology of major diseases affecting cool-season food legumes in West Asia and North Africa (WANA), particularly those caused by *Ascochyta fabae*, *A. rabiei*, *Fusarium oxysporum f.sp. ciceris* and *lentis*, *Botrytis fabae* and *Uromyces viceae-fabae*. The studies will take place under laboratory, plastic house and field

conditions to provide missing critical information on factors affecting the distribution, development and spread of these diseases. Scientists will determine variability in virulence of pathogen populations on a range of host genotypes and evaluate germplasm and breeding lines of faba bean, chickpea and lentil originating from the ICARDA/Australia project for disease resistance and adaptation. They will also initiate the development of computer-based simulation models of epidemics to enable disease forecasting and to use as decision-support tools for disease management (e.g. fungicide application).

**Commissioned Organisation:**

International Centre for Research in the Dry Areas, Syria

**Collaborators:** *Australia* University of Adelaide; Department of Agriculture, Western Australia; NSW Agriculture; Agriculture Victoria.

### Small

LWR2/2001/041: Drill modification for rice–wheat with straw retention

### System-wide Grants

**ADP/2001/092: Fish in food: the critical role of fish in world food issues**

Fish constitutes the fastest growing source of food and nutrition in the developing world. This project will undertake a systematic study to gauge the potential impact of fish consumption on food security, nutrition, diets and income of poor people in developing countries over the next two decades. Researchers will also examine the relationship of aquaculture to global trade, the environment, public health and technology. The main goals of the project are 1) to incorporate fish into the global food model (known as IMPACT) developed by IFPRI for making projections of world food prices and quantities, and 2) to provide an analysis of the key role of aquaculture in the context of rapid

changes in world demand for animal products (and fish in particular). Project staff will present post-study workshops and disseminate information to raise the profile of fisheries at the multilateral and international levels.

**Commissioned Organisation:**

International Centre for Living Aquatic Resources Management (ICLARM), Malaysia

**Collaborating Institutions:**

International Food Policy Research Institute (IFPRI), USA

**Project CS1/2001/068: Technical support for regional plant genetic resources development in the Pacific**

The unique and important diversity maintained in the perennial crop-based production systems of Pacific island countries is becoming better recognised. However despite efforts to collect, conserve and improve plant genetic resources (PGRs) such as roots and tubers, bananas, coconuts and breadfruit, progress has occurred only with a few crops in a limited number of countries. ACIAR supported a workshop in Lae PNG in 1999 to develop a framework for PGR conservation, management and use in Pacific agriculture. A working group formed at the workshop has drawn up that framework, and funding to progress it has been made available through New Zealand Official Development Assistance. ACIAR is funding a coordinator to supervise the project work and to provide technical advice, and is also augmenting the activities provided with NZODA funding.

**Collaborating Countries:** Australia,

**Commissioned Organisation:**

International Plant Genetic Resources Institute, Malaysia

**Collaborators:** Secretariat of the Pacific Community, Fiji (representing Cook Islands, Fiji, Kiribati, Malaysia, Nauru, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu)

**Project FST/2001/020: Alternatives to slash and burn in SE Asia, phase 3: Facilitating development of agroforestry systems**

This project is the third phase of the global Alternatives to Slash and Burn (ASB) program. The broader aim of ASB is to identify and test innovations that will help eradicate poverty while simultaneously curbing the environmental problems associated with deforestation. The current project focuses on farm-level agroforestry options for landholders to reduce soil loss and improve water quality through enhanced landscape filter function, using trees and other vegetation management. The project emphasises working with farmers to understand their needs and constraints, and jointly developing and testing options for environmental improvement while maintaining profitability and viability of farming practices. A long-term goal is to build community groups that can further develop and refine local conservation measures. This research is taking place in Sumatra within the study area of previous ASB phases.

**Commissioned Organisation:**

International Centre for Research in Agroforestry (ICRAF), South East Asian Regional Research Program, Indonesia

**Collaborators:** *Australia* Queensland Horticulture Institute; *Indonesia* Lampung University; Forest and Nature Conservation Research and Development Centre;

Center for Soil and Agroclimate Research; Agency for Agricultural Research and Development.

## New publications

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## Proceedings

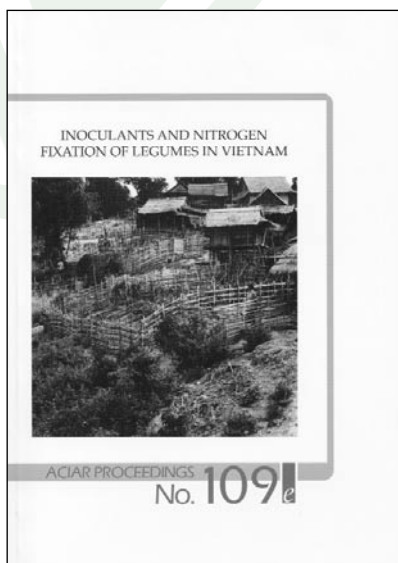
### Water Policy Reform: Lessons from Asia and Australia

Water scarcity is an issue of great concern in many countries. Population and economic growth has led to rising demand for water for human consumption, food production and industrial uses, while opportunities for supply augmentation are becoming prohibitively expensive. Because irrigated agriculture is a dominant user of water resource, the level and efficiency of water used in this sector is under increased scrutiny. Competition with other sectors may imply that less water is available for irrigated agriculture in water-scarce regions, placing increased importance on improved efficiency of water use within agriculture. Demand management policies will become increasingly important as a means of coping with increased water scarcity in the future. The papers contained in these proceedings are the product of an ACIAR Water Policy Workshop held in Bangkok in June 2001.

Brennan, D., ed. 2002. ACIAR Proceedings No. 106. Price \$A36.00 (plus postage and handling).

### Inoculants and Nitrogen Fixation of Legumes in Vietnam

ACIAR Project LWR2/98/27 'Increasing yields and nitrogen fixation of soybean, groundnut and mungbean in Vietnam through rhizobial inoculation' commenced in April 1999 with the broad mission of laying the foundation of a program to produce sufficient high-quality rhizobial inoculants to satisfy Vietnam's expanding legume industry. Seventeen technical papers were presented during the two days of the workshop, covering applied and fundamental issues of rhizobial and non-rhizobial inoculant



production and application. A number of the papers contained in these proceedings, clearly outlined the substantial economic benefits from replacing fertiliser N with rhizobial inoculant in legume cultivation in Vietnam. Vietnam cultivates about 700,000 ha of legumes annually, equally distributed between the north and the south of the country. It was also clear for inoculation to become a reality, high-quality inoculants would need to be as readily available in the market place as fertiliser N and

farmers would need to be educated in their use, just as they are educated about using fertilisers and chemicals. The workshop ended very positively with consensus among the group that a new coordination program would be developed encompassing large-scale inoculant production in both the north and south of Vietnam, and associated research, extension, policy development and evaluation.

Herridge D., ed. 2002. ACIAR Proceedings No. 109e. Price \$A25.00 (plus postage and handling).

## Monographs

### How to Unravel and Solve Soil Fertility Problems

Soil fertility problems can be resolved and yields increased by the judicious use of fertilizers, crop residues and/or organic manures. However, such remedies will have a fuzzy element of muck and magic about them unless the location-specific nutrient requirements of the crop are pinpointed. This monograph provides a vehicle for developing country farmers to benefit from scientific knowledge on plant nutrition and soil fertility. Many factors can contribute to slow or unhealthy plant growth and, ultimately, to reduce yields. These include unfavourable weather leading to drought or waterlogging; acid rain from active volcanoes; competition by weeds; attacks by insect pests and shortages or excesses of particular chemical elements in the soil surrounding the roots. This book is about how to recognise and deal with shortages or excesses of chemical elements.

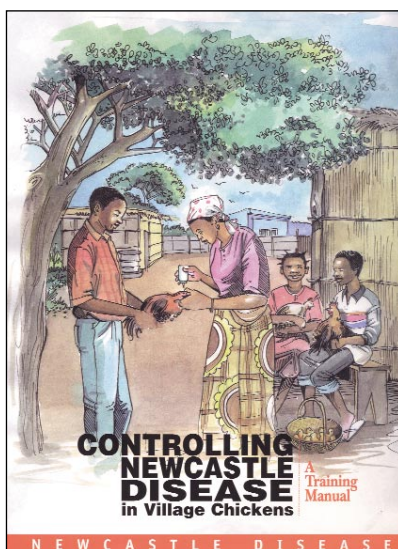
Asher, C., Grundon, N. and Menzies, N. 2002. ACIAR Monograph No. 83. Price \$A24.00 (plus postage and handling).

### **Regional Water and Soil Assessment for Managing Sustainable Agriculture in China and Australia (English with Chinese abstracts)**

This book summarises the results of a collaborative project between Chinese and Australian scientists to improve agricultural water use efficiency (WUE) and thereby increase agricultural productivity and sustainability in China and Australia. The project was externally funded by ACIAR with significant in-kind contributions from both the Chinese Academy of Science (CAS) and Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO). The study focused on three main regions: a) The North China Plain (NCP) (main problem, reduced agricultural output due to soil degradation and falling groundwater tables, caused mainly by salinisation and inefficient water use); b) The Loess Plateau, (main problems, lack of water availability for crops and soil erosion); c) The Murray-Darling Basin (MDB) in southeast Australia, which includes the eastern part of Mount Lofty Ranges and the Upper Murrumbidgee catchment. The main problems here are salinisation, waterlogging and sodicity caused by rising saline groundwater. This manual will help users to make good decisions, improve their understanding of the processes of waterlogging, and offers solutions to improve quality of

their properties. Where the manual has been applied in the Mount Lofty Ranges area, degraded saline wet areas have been rehabilitated and erosion has been halted through measures such as realigning fencelines and revegetation.

McVicar, T. R, Li Rui, Walker, J., Fitzpatrick, R. W. and Liu Changming, ed., 2002. ACIAR Monograph No. 84, Price \$90.00 (plus postage and handling).



### **Controlling Newcastle Disease in Village Chickens: A Training Manual**

This manual aims to assist trainers to enable farmers to become successful community vaccinators against ND. The manual focuses on the use of freeze-dried vaccine applied with via

eye drop. Controlling Newcastle disease (ND) in village chickens can make a significant and positive contribution to the lives of people in rural areas. To ensure that ND is controlled in a way that will be least expensive to farmers, it is important that farmers themselves learn how to vaccinate chickens against the disease and how to raise their chickens in a way that is more likely to keep them healthy.

Alders, R., dos Anjos, F., Bagnol, B., Fumo, A., Mata B. and Young M. (ed) 2002. ACIAR Monograph No. 86, 128p. Price \$30.00 (plus postage and handling)

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