



INDONESIA *Newsletter*

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Julien de Meyer (centre) with Indonesian journalists from Bisnis Indonesia, Antara and Sinar Tani

Media Visit to Central Java and Yogyakarta

As part of its celebration of 25 years of involvement with Indonesia and to mark this event, ACIAR invited four Indonesian reporters (from Antara, *Bisnis Indonesia*, *Sinar Tani* and *Kompas*) to visit Central Java and Yogyakarta to see some of ACIAR's projects in horticulture, aquaculture and poultry production. With the assistance of the not-for-profit Crawford Fund, which promotes international agricultural research and development, a radio journalist from the ABC (Sarina Locke) also took part in this trip.

The visit, from 20 to 23 April 2009, was organised in collaboration with the Public Affairs Division of the Indonesian Ministry of Agriculture.

The journalists were given opportunities at each project site to interview and get detailed information from farmers and scientists, as well as from the officials.

Three projects were visited; one dealing with citrus greening disease, another with the control of highly pathogenic avian influenza (HPAI) in ducks, and the third with improving the productivity of smallholder shrimp aquaculture. The first two projects were in Kutoarjo, the last had its demonstration ponds in Demak.



Sarina interviewing Prof. Dr Ketut Sugama (Director, Seed Production)

Management of CVPD (Huanglongbing) in Indonesia, Vietnam and Australia



Collaborating farmers in Kutoarjo (Central Java)

Huanglongbing is regarded as the world's most devastating disease of citrus. It is widespread in Asia and Africa and, since 2004, it has been recorded in Florida, South Carolina and in Louisiana in the United States of America, in Brazil in South America and Cuba in the Caribbean. In Indonesia, where it causes production losses of 50 to 100 per cent, it is known as citrus vein-phloem degeneration (CVPD) disease and, although huanglongbing ('yellow shoot disease') is the official name, the disease is usually called citrus greening. In Asia, it is caused by *Candidatus Liberibacter asiaticus*, a bacterium that grows in the vasculature of its host plants. The disease does not occur in Australia where an 'incursion management plan' has been prepared recently to deal with an incursion of the bacterium, and incursions of the two known insect vectors, two psyllids, *Diaphorina citri* (from Asia) and *Trioza erytreae* (from Africa).

When infections occur in seedlings, plants never produce fruit. When infection occurs within 6 to 12 months of planting, fruit may be produced, but yields are low and decline rapidly and the trees die within a few years. In addition to transmission by its insect vectors, the pathogen can also be transmitted when infected buds are used in nurseries, and its spread is accelerated when farmers use marcots (air layering) to propagate plants.

In Indonesia, the spread of the disease through the islands is caused by the distribution of infected seedlings along with contamination with psyllid eggs, nymphs or adults. Although supply chain management of disease-free citrus seedlings has been established and coordinated by Balitjestro, too few nurseries and a high demand for seedlings have lead farmers to purchase infected seedlings from unreliable sources.

In a trial at Purworejo, *D. citri* has been controlled by mineral oils and by contact insecticides, but the most effective treatment has been the application of a systemic insecticide (imidacloprid) to the soil around the base of the trees.

Intercropping citrus plantations with two varieties of guava (seeded and seedless) has shown that the presence of the seedless variety of guava in the experimental blocks leads to

lower populations of *D. citri* than would occur in citrus plants grown without seedless guava in proximity. This result supports observations made in Vietnam; however, further work is required on the efficacy and applicability of this method of psyllid control.

Management of huanglongbing is quite complex, especially at altitudes below 1000 m above sea level. Planting disease-free seedlings is absolutely essential as the first step. This is followed by ensuring that the plants are protected from infestations *D. citri* in the field. Control of the psyllid is very important when new citrus plantings start with seedlings. Our work suggests that disease management should be based on the use of mineral oil sprays and guava interplants to repel *D. citri* from orchards, and on the selective use of contact and systemic pesticides that have little effect on natural enemies. It is imperative that mineral oils be registered for use in Indonesia.



Infected citrus

The Epidemiology, Pathogenesis and Control of Highly Pathogenic Avian Influenza in Ducks in Indonesia and Vietnam

Highly pathogenic avian influenza (HPAI) H5N1 virus has been causing outbreaks of disease in poultry and deaths in humans since 2003. Indonesia and Vietnam are two of the countries most severely affected by H5N1 HPAI in terms of human and of poultry health. Despite the control measures in these countries, cases of HPAI infection continue to occur in humans and poultry.

A three-year ACIAR project was established in 2006 to investigate the proposed role of ducks as maintenance hosts for H5N1 infection. Longitudinal studies are being conducted in both countries to examine the patterns of infection in small-scale commercial and in backyard farms.

For this study, in Indonesia, 96 smallholder duck farms were selected from sixteen villages in four districts of Central Java (Sleman, Magelang, Kulon Progo and Bantul). From early 2007, these flocks were monitored every two months over a year, with ten ducks and five in-contact chickens sampled from each farm. Questionnaires were used to collect information on changes in flock structure, husbandry practices, marketing, health status of the ducks, HPAI outbreaks and flock vaccination status. Blood samples and swabs were collected from the individually identified birds and tested for the presence of H5 antibodies or virus.

The ducks that were monitored were not vaccinated against HPAI. Results indicate that many duck flocks were susceptible to infection and became exposed to the HPAI



Blood samples being tested at DIC Wates laboratory

field virus. This resulted in frequent HPAI outbreaks during the period of the study. A similar study was conducted in Vietnam.

Also as part of the project in Indonesia, the nomadic farming or moving duck management system has been monitored. In this system, post-harvest spilled rice is used as a feed source for ducks and the organised and coordinated movement of duck flocks to areas of recent rice harvests is conducted. In this current research, 54 nomadic duck flocks in six districts of Central Java (Brebek, Pemalang, Batang, Kendal, Purworejo and Klaten) have been monitored monthly since October 2008.

At the first research visit to a duck farm, a baseline questionnaire was completed to describe the management of nomadic duck flocks over the previous 12 months and to give details of the intended movement of birds over the next 12. At subsequent visits, a monthly

questionnaire is completed that recorded information on changes since the last visit to the structure of the moving duck flock, to movements, scavenging and trade, to the health of the ducks and to production standards. Also in this study blood samples and swabs are collected at each visit and tested for the presence of H5 antibodies and H5 virus. A similar study is currently underway in Vietnam.

Analysis of the full data set from these longitudinal studies will elucidate the role played by ducks in the maintenance and transmission of H5N1 virus. This information will increase understanding of the epidemiology of the disease in ducks and help policy makers improve HPAI control measures and surveillance strategies. Monitoring infection in ducks may help to reduce the risk of virus transmission to other poultry species and to humans.

Improved Productivity of Smallholder Shrimp Aquaculture

Shrimp is the most important export in Indonesia's fisheries sector. About 200,000 hectares of brackish-water ponds (40 per cent of the total) are used for growing shrimp in Indonesia. Of these, 75 per cent are farmed extensively (using 'traditional' or 'traditional plus' systems, sometimes in polyculture with milkfish), 15 per cent semi-intensively and 10 per cent intensively farmed. There are 35,000 and 104,000 ha of brackish-water ponds, respectively, in the project's two target provinces, Central Java and South Sulawesi.

Farming at each level of intensity can be profitable and sustainable, as long as biosecurity, productivity, environmental and social requirements are properly managed. To remain competitive and to ensure produce can be put on the export market, governments and industry supply chains are increasingly taking into account the

importance of international food safety standards, and of marketing and value-adding as effective strategies to ensure competitiveness.

During 2008, we explored possible links with ACIAR's Smallholder Agribusiness Development Initiative (SADI); initial contacts were very promising and the possibilities will be explored further in 2009. Accordingly, we have now adopted the SADI approach involving 'proof of concept' and 'proof of delivery' steps on the road to achieving 'pilot rollout', which for our project means from 400 to 1000 farmers adopting better management practices (BMP) programs by the end of 2010.

Consultants from Gadjah Mada University (GMU) and Hasanuddin University (HU) conducted pilot socioeconomic studies in selected districts in Central Java and South Sulawesi, respectively, into factors

likely to influence farmers to adopt BMP programs. In parallel with this and to accommodate planned implementations in Central Java in 2009, trainers from GMU, assisted by a consultant, led an extension training workshop at BBPBAP, Jepara, in February 2009. Trainees were provincial Dinas staff, as well as field technicians from target districts, and the aim was at building capacity in facilitating BMP program adoption by farmers. Outputs included a slogan, 'BMP Aman Menguntungkan' [BMP safe and profitable], organisational charts with roles and responsibilities, district crop calendars and action plans. Participants also identified constraints faced by Dinas extensionists, including limited field staff and resources, declining shrimp prices, and limited farm-level resources.



Extension workshop participants talking to the village leader

Research to Boost Citrus Production

Market development of citrus from eastern Indonesia

Theme: benefiting from high-value products

3.bp.blogspot.com

The issue

Indonesia produces and consumes a range of citrus products and fresh citrus is an important component of modern domestic retailing.

Unfortunately, most of the high-value fruit consumed in Indonesia is imported. Many consumers do not demand domestic produce from particular regions-local products are simply unable to compete consistently on appearance, quality, taste and price.

The situation is particularly poor in eastern Indonesia, where citrus production accounted for only 12 per cent of the volume of citrus produced in Indonesia in 2005. This was a decline from 22 per cent in 1999. Over the past six years, production of citrus in eastern Indonesia has increased by just 163 per cent, compared with a national increase of 392 per cent.

The demand for imported fruit is growing rapidly, and local citrus producers have fewer opportunities in the market. They need new ways to compete with international suppliers.

Collaborative response

In examining citrus production, ACIAR-SADI is looking at all the links in the supply chain and looking at the systems and processes involved in moving citrus from supplier to customer. Teams from the Indonesian Citrus and Subtropical Fruits Research Institute, from three Assessment Institutes for Agricultural Technologies (BPTP),

and from provincial and local extension agencies, are evaluating a number of model supply chains, initially from East Nusa Tenggara (NTT). The evaluation will help to improve the quality and the management of produce from smallholder farms to enable it to be sold in more profitable markets, such as modern retail chains. In addition to managing quality, the research group is also looking at monitoring crop loads to improve understanding of productivity per tree and empower smallholders in price negotiations.

Emerging effects

The supply-chain evaluation aspect of this research has initially focused on citrus from Soe, which produces mandarins that are highly regarded and valued by Indonesian consumers. This exploration has resulted in a model that involves

- developing ways to monitor crop loads and fruit size,
- ensuring that smallholders have more information when it comes to selling their produce, and
- improving the quality on-farm and providing smallholders with a better understanding of how the supply chain works.

As well as from activities in eastern Indonesia, the project team will visit Australia to gain greater insights for developing improved citrus supply chains and ways to ensure high quality produce is sent to the market.

Future direction

Next season, smallholders will

further develop their skills in crop estimation and management, and be involved with tracking fruit through a supply chain to retail markets.

The model that is being developed in NTT will be able to be used in other citrus-producing regions of eastern Indonesia. To realise this potential, project team members, including those from South and Southeast Sulawesi, will be supported to start evaluating supply chains from these regions, based on the NTT experience.

As these chains are developed, they will also include pre and post-harvest quality management, critical crop load management and estimation to give smallholders greater bargaining power in the trade in citrus.



Citrus farmers can build a better future by focusing on quality and product management

Adding Value In Passionfruit Production

Integrated tropical passionfruit production systems in South Sulawesi

Theme: Benefiting from high-value products



Plants being evaluated in farm settings

The issue

Passionfruit from Indonesia, generally known as markisa, is consumed fresh or used as a processed constituent of many drinks. As well as local and domestic consumption, processed passionfruit pulp is exported to be used in manufacturing a range of food and beverages.

South Sulawesi was a well-known passionfruit-producing region but, because of pests and disease, as well as fluctuating supply and price, the industry, once profitable, has declined.

South Sulawesi's passionfruit production is worth US\$1 million, so the market presents an excellent opportunity for small farmers to create a more sustainable income for themselves through better management.

Collaborative response

ACIAR-SADI is working in partnership with Assessment Institutes for Agricultural Technologies (BPTP), the

University of Hasanuddin, provincial and district extension services, farmers' groups and a private processor, to understand the reasons for early passionfruit vine death, which is a common problem for farmers. The partnership is introducing new, improved plant stock that will increase yields and quality of pulp as well as be more resistant to pests and diseases in the highlands. New plant stock and management methods will also allow production in lowland areas, which so far have not grown passionfruit. These factors will improve consistency in supply and reduce price variability.

Emerging effects

New varieties, including disease-resistant rootstocks, have been introduced and are being tested to improve productivity in current areas of passionfruit production and in other areas that show potential. They are being evaluated on the characteristics that influence product quality and adaptability to different regions. These varieties have been introduced from Australian and international collections and offer the best genetic material to provide a sound basis for industry development.

Once the results from researchers' initial testing into the pathological causes of decline in vine health are analysed, resources can be directed towards lowering barriers to a healthy, highly productive passionfruit industry.

Future direction

The new varieties of plants introduced will be evaluated in

commercial settings, using various best management practices. This will facilitate evaluation in farm situations, thus enabling improved scale-out of the new plants to farms throughout the provinces.

The investigations into vine decline will not only help understand causes of vine death, they will also develop management strategies that are effective for smallholders. These strategies will enable vines to be established that have a longer production life, ensuring a greater return on investment.

This research is also exploring the development of a more efficient supply chain, including the integration of new seed supplies, implementing knowledge transfer for improved management, and developing better systems within the supply chain and the trade. This will enable the development of a more competitive passionfruit industry for eastern Indonesia.



Indonesian passionfruit is used world wide in beverages

John Allwright Fellowships - Call for Nominations

We are calling for applications for John Allwright Fellowships for study at Australian universities, commencing in 2010. The primary aim of the Fellowship scheme is at improving research capability in ACIAR's partner-country institutions. Through the fellowship award, funding is provided for research staff engaged on ACIAR projects to obtain postgraduate qualifications in Australian universities. Although applications are welcome from participants in bilateral and multilateral (IARC) projects, applicants must be working in the following ACIAR partner countries to be eligible. Currently these are:

- Papua-New Guinea
- in the Pacific: Fiji, Samoa, Tonga, Solomon Islands, Vanuatu, Kiribati
- in SE Asia : East Timor, Indonesia, Vietnam, Cambodia, Laos, the Philippines
- in SAsia: India, Bangladesh, Pakistan
- in NAsia: Western China
- Republic of South Africa

Please note that up to two return airfares for a master degree student and up to three for a PhD student are permitted for fieldwork in the home country on the advice of the university supervisor and ACIAR. If fieldwork travel is considered necessary it should be included in the study program submitted with the application for a fellowship.

The closing date for applications to reach ACIAR is **31 July 2009**. The Training Committee will meet in August to consider these applications: please ensure that completed applications including certified true copies of academic transcripts, degree certificates and referee reports from Australian and partner-country project leaders, are received by the due date.

We look forward to receiving your applications. The Fellowship Guidelines and Application Form can be accessed at ACIAR website www.aciar.gov.au.



www.wikimedia.org

University of Melbourne



University of Queensland

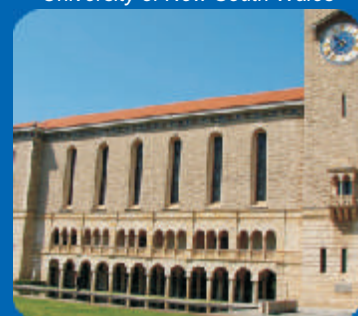


Australian National University



www.farm1.static.flickr.com

University of New South Wales



www.abc.net.au

University of Western Australia

Staff Movement

• **Dr Chris Barlow** has been appointed the new Fisheries Research Program Manager. Chris is well-known in Australia and many ACIAR partner organisations. He is Chief Technical Advisor for the Fisheries Program of the Mekong River Commission (MRC), based in Vientiane, Laos. Before he began with MRC in 2001, he was Program Leader-Aquaculture with the Queensland Department of Primary Industries and had worked with the department in fisheries and aquaculture from 1983 on. He has worked extensively in Southeast Asia since 1975, and has published

widely in scientific journals and technical reports and publications. Chris's current role in program management is similar to that of an ACIAR RPM, that is, setting strategies for research programs, brokering major R&D partnerships between countries and organisations and managing programs in stakeholder countries in the region. Chris will be based in Canberra and commence on 31 August, although he will also take part in the upcoming fisheries program workshop in Sydney later this month. We have asked Barney Smith to continue in his current role

until 11 September, but to be based in Canberra for three days each week.

• **Ir Djumbuh Rukmono MSi** has been appointed the new Head of Technical Implementation Unit (TIU) Batam, to replace Dr Sjamsul Akbar. Previously, Ir Rukmono was an official at the Directorate of Fish Health and Environment at the Directorate General of Aquaculture, Jakarta.

New Publication

Final Report: Abalone industry enhancement in Eastern Indonesia

Aquaculture plays an increasing role in Indonesia's economy, employing about 2.5 million people, provides an important source of nutrition, and generates valuable foreign exchange and domestic revenues. Because of its rich coastal resources and numerous inland water bodies, Indonesia has great potentials for abalone aquaculture. As a high-value species (up to US\$33 per kg) and its culture becoming a lucrative aqua-business venture, abalone is considered the next most important aquaculture species in many countries today, Indonesia included.

There is an abalone fishing industry in Indonesia, particularly for *Haliotis asinina* and *Haliotis diversicolor diversicolor*. Because of

overfishing or unregulated harvesting, caused by a high demand and high prices, abalone stocks have been depleted, a situation similar in almost all countries where there is abalone fishing. A subtropical species in Indonesia, *H. diversicolor diversicolor*, (locally known as 'tokubushi') is important in terms of species diversity and the feasibility of adoption of available technologies for culture. This species has a special market as 'cocktail' abalone, especially in China, Japan, Taiwan and Hong Kong.

The availability of a reliable seed supply is very important in the commercial production of abalone. However, hatchery production at present is still insufficient to meet the demand by abalone growers. Government hatcheries have some basic facilities to initiate hatchery production, but facilities and equipment required for abalone seed production are still lacking. Hatchery techniques for brood stock maturation, spawning and larval rearing have to be refined. The biggest problem at present is the very low survival rate of early juveniles that are needed to produce the seed for stocking grow-out farms. Manpower skills development through hands-on



Abalone hatchery

training in science-based technologies should be conducted to give hatchery personnel knowledge of proper hatchery operations.

Sea ranching or stock improvement programs are another option where government can play a big role in helping marginalised fishermen to increase their catch. However, hatchery technology should be refined first in order to produce sufficient quantities of seed to support such developments. Implementing the regulations for managing marine protected areas (MPA) has to be strengthened so that marine resources can be regulated properly. Organisation of community fishermen is highly recommended that will oversee and implement regulations of MPAs or fish sanctuaries.



Dried abalone

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