



THE CRAWFORD FUND
For a Food Secure World

HIGHLIGHTS

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Still “DOING WELL BY DOING GOOD”

“Giving agricultural aid is one of the best ways of helping overseas countries, and, at the same time, helping ourselves.”

The above quote by the Rt Hon J D Anthony CH, FTS is in “Doing Well by Doing Good,” the book that launched the Crawford Fund, published in 1991. The sentiment is mirrored by the Hon John Kerin and Tim Fischer, Chair and former Chair of the Crawford Fund in their preface of the Fund’s Doing Well by Doing Good Task Force Report which is now available.

This important report comes at a time of constrained public sector spending on both development assistance and research for development. It backs our long-held claims around the mutual benefit of aid investment in international agricultural research - “doing well by doing good” - with the latest economic analyses as well as authentic statements of support from trusted people in the international and Australian R&D scene.

Of course, the Crawford Fund has always promoted that Australian development assistance programs in agriculture and related sectors should retain their primary purpose of assisting economic and social development in the developing countries, in accordance with Australia’s nation interests.

But in addition, and without detriment to this purpose, we’ve argued that they can deliver direct and indirect benefits to Australia. Now the report has substantiated our contention with sound argument and independent analysis. International agricultural research is aid that works. It delivers significant benefits to Australian farmers, and contributes to Australian knowledge and research capacity, without diverting attention away from its objective of supporting food security and development in developing countries. Proof of this can be found in the Task Force report, which references a scholarly meta-review of published analyses of costs and benefits to Australia from the work of the international agricultural research centres and of a range of projects by the Australian

Centre for International Agricultural Research (ACIAR) – as well as feedback from key stakeholders and individual farmers, scientists, researchers, extension workers and others involved in domestic and international agricultural research.

Our review of ACIAR’s bilateral research program (about 70 per cent of its budget) found that the rate of return on investment by ACIAR and its Australian and developing country partners - from a limited sample of projects of about 10 per cent of the total bilateral program - was between 50:1 to 70:1 respectively depending on whether benefits included are judged to be convincing or plausible. This return greatly exceeds total investment in bilateral research since ACIAR’s inception 31 years ago.

Another former chair of the Fund, The Hon Neil Andrew, led the small task force that included Dr Terry Enright, farmer and former chair of the Grains Research and Development Corporation;



Still "DOING WELL BY DOING GOOD"

Dr Tony Gregson, also a farmer who has an extensive science and corporate research management background; Ms Cathy McGowan, rural consultant, academic and now Member of Parliament and Prof John Mullen, a distinguished fellow of the Australian Agricultural and Resource Economics Society from Charles Sturt University. The report was authored by John, Eric Craswell and Denis Blight with the help of Crawford Fund staff. The group was tasked to address issues raised by the National Farmers' Federation on the orientation of ACIAR programs. Naturally enough, the NFF wants the programs to consider benefits to Australian farmers in their design and conduct.

"Together with The Hon. Margaret Reid AO, Dr Tony Gregson AM and Dr Denis Blight AO I had the pleasure of calling on The Hon Julie Bishop recently and was pleased to find her sympathetic to our findings and supportive of the work of ACIAR," said Mr Andrew.

The Fund is now pursuing a set of further briefings and public events with key politicians, other decision-makers, stakeholders and the general public through the media to raise awareness of the effectiveness and benefit from agricultural research for development.

The key findings of the report follow:

International agricultural research serves Australia's development assistance objectives

According to independent impact assessments, economic returns on investment by ACIAR and its Australian and developing country partners, mainly in the form of increased farm incomes in developing countries, are very high.

Similarly, high returns to the developing countries are reported from Australian aid investments in multilateral agricultural research agencies.

Australian agriculture benefits from ACIAR bilateral projects

Not only has the ACIAR investment delivered very high returns in terms of benefits to the developing countries, it has delivered benefits to Australia almost as large as the value of our total investment in ACIAR.

Australia also benefits from international agricultural research centres

In recent years, Australia has contributed about \$10 million a year in support for international centres, as part of its broader support for 15 international agricultural research centres. Annual benefit flows, largely derived from the use in Australia of germplasm from just three of these centres, is estimated at nearly \$100 million.

Participating in international agricultural research strengthens Australian research capacity

Australia's ability to benefit from international agricultural research depends on it having strong domestic research institutions. This contributes to the depth, breadth and relevance of expertise in Australia that is available to the international agricultural research system, which helps in turn to build enduring linkages between Australian research institutions and their international counterparts - keeping Australia within the circle, enabling access to global knowledge and product innovation networks.

Australia, and the developing countries, might benefit from global private sector spending on agricultural research

Some 40 per cent of global spending on agricultural research comes from private sector investment, including multinational corporations in Europe and North America. ACIAR should consider how public private partnerships might deliver greater benefits to Australia and the developing countries.

Indirect benefits also flow to Australia

Indirect benefits to Australia from international agricultural research include the contributions to regional security and peace based on improved food security; increased trade through better relations; the enhancement of Australia's standing as a good international citizen, and improvements to Australian researchers and research/educational institutions.

Conclusions and Suggestions:

The task force concludes that international agricultural research:

- is highly effective aid with real and significant benefits to Australian farmers
- enhances Australian research capacity, delivering greater Australian productivity and that this
- leads to more Australian food exports, as well as to increased agricultural productivity in the developing world, contributing to global food security.

The task force's suggestions focus on opportunities that arise through ACIAR

John Kerin – a genuine rural leader

Our chairman, the Hon John Kerin, was recently awarded an Honorary Fellowship of the Australian Rural Leadership Foundation for his contribution to rural Australia. The Foundation Board Chair, Dr Wendy Craik, made the presentation. Upon accepting his award, John presented a speech offering his views on leadership in politics, the Public Service and in farm organisations. The speech is available on the ARLF website <http://rural-leaders.com.au> which welcomes readers to enjoy the wisdom of a genuine rural leader!



John Kerin with Wendy Craik

Still **"DOING WELL BY DOING GOOD"**

being the key funding agency for international agricultural research. It suggests that:

- ACIAR remain integral to Australia's aid program and part of its innovation system
- in establishing its portfolio activities, ACIAR could consider more closely Australia's National Primary Industries R, D & E Framework and the need to expand the number of agricultural researchers, alongside the priorities of partner countries. This would align the portfolio with Australia's expertise and interests and with those of ACIAR's partner countries resulting in enhanced benefits to both developing countries and Australia
- ACIAR consider supplementing its impact assessments by including measurement of the strengthening effect that participation in international agricultural research has on Australian institutions
- ACIAR continue to explore greater scope for private sector participation in

international agricultural research and that this exploration include the question of benefits to Australia as well as the developing countries

- ACIAR should remain as a separate entity and its budget maintained at least at its current real level and increased as its contribution to agricultural productivity in Australia as well as the developing countries is confirmed
- International agricultural research programs funded by the Australian aid program should place more emphasis than they currently do on benefits to Australian farmers and to Australia's agricultural research capacities.

The Fund's full report was launched in mid-December, to coincide with a meeting of ACIAR's Commission.

The report, and the separate meta-analysis of impact assessment studies that form the basis of the key benefit figures quoted in the report, are available on the Fund's website.

On our YouTube site are testimonial videos by a range of international

and Australian spokespeople on their reflections and experience of benefits from agricultural research for development.

Readers may also be interested in the most recent edition of ACIAR's Partners Magazine, providing examples of ACIAR's work and partnerships benefitting Australia.

And now we have new up-to-date information on benefit, perhaps the final word should go to Emeritus Professor Derek Tribe, who had the foresight to establish the Crawford Fund and first argue the case for international agricultural research:

"There is a mass of evidence to support the view that (bigger and better involvement of Australia in international agricultural research) represents the best of all opportunities for Australia to assist Third World development, while at the same time advancing her own best interests." *Doing Well by Doing Good, Pluto Press, 1991.*

Derek Tribe Award

Dr Murom Banabas, Head of Agronomy at the Papua New Guinea Oil Palm Research Association, is the recipient of the Crawford Fund 2013 Derek Tribe Award. The award recognises his 22 years of research and technical assistance dedicated to improving the sustainability and productivity of the oil palm industry in PNG. Dr Banabas received the award and made the Derek Tribe Address in early October at the CSIRO Plant Industry on "Working towards environmentally and socially sustainable oil palm production in Papua New Guinea."



Crawford Fund 2013 Fellowship



Our Fellowship for 2013 has been awarded to Mrs Sita Bantha Magar, an Agro Enterprise Development Specialist from Nepal. With a farming background in an indigenous ethnic group, Mrs Magar is an agriculturalist with strong, diverse and hands-on knowledge, backed by theoretical understandings of underlying scientific principles. She will spend time at the Central Queensland University to learn about quality control, supply chain management, farm practices and post harvest activities.

Bread from Stones?

The Crawford Fund 2013 Annual Conference, August 2013

You cannot eat stones, just as you cannot eat iron ore or coal; but the production and sale of valuable minerals and precious stones can pay for bread and other nutritious food products.

Economic activity generated by mining industries can contribute equitably to broader national growth and to economic well-being, including supporting the poor. Similarly, infrastructure built for mining industries can ease the supply of inputs, and access to markets, for the agriculture sector.

These positive outcomes can only be achieved with the right mix of policies, governance structures — functioning democracies — and enlightened self-interest on the part of the miners. Reform is needed at all levels, including big government policy issues; major investment decisions and social responsibility programs by corporations large and small; and cooperative on-ground action by miners and agriculturalists.

If these and a number of other challenges — such as need for cross-ministerial collaboration, community participation, science and technology expertise, revenue transparency and impact assessment capacity — can be addressed effectively, then there could be synergy between agriculture and mining sectors. Together, they could support the development of infrastructure, technological innovation and mechanisation, employment, income generation and greater food security.

These themes resonated throughout the Crawford Fund Conference 'Bread from Stones' on 26–27 August 2013, organised in partnership with the Africa Australia Research Forum during the mining event "Africa Down Under" in Perth.

"The conflicts in Australia are what really triggered Crawford to partner with the African Australia Research Forum. I think it will lead to a more thoughtful appraisal of the interaction between the two sectors," said Denis Blight, Chief Executive of the Crawford Fund.

"There is a lack of understanding and knowledge between the two sectors. I certainly never appreciated how big Australian investment in Africa's mining sector has become. It's estimated to be at least \$40 billion and I can see the clear opportunity for mining and agriculture to partner in Africa," he said.

For the speakers and delegates from across Africa, Australia and overseas, it was clear that the prominence and importance of the mineral resource industry should not obscure the importance of agriculture in these countries. The sectors must work together.

Healthy mining industries should boost national incomes, including incomes for the agricultural industries capable of meeting the increased demand for their produce generated by income growth. And after mining has finished, where possible the land needs to return to other productive pursuits including agriculture.

This consideration creates the need, according to Mario Pezzini of the OECD's Development Centre, for sound policy formulation and implementation. He told the conference that growth in Africa could aid global growth, but this will only be achieved with thoughtful utilisation of the continent's natural resources including the fertility of its soils, the health of its forests, the quality of its waterways and the vast mineral deposits and energy resources.

In the words of Festus Mogae, former President of Botswana, in his keynote

address at the conference, "the experiences of many African countries in the exploitation of their mineral and economic resources have historically not always led to sustainable development and have certainly not been pro-poor."



His Excellency Festus Mogae and The Hon Florence Chenoweth

Its vast mineral resources afford Africa the opportunity to grow its economies more quickly than the global average and beyond the current rate for the continent of about 5 per cent. Few reliable studies are available on the contribution of the mineral industries to economic growth in Africa. Nor is comprehensive quantitative evidence available on the economic benefit to agriculture from the mining sector.

At the same time, however, there is good data available on the local impact of mining investment and production in some parts of Africa and some assumptions can no doubt be made from studies in other countries. But impact assessment capacity in Africa may be weak.

Policy needs to work at the interfaces between not only agriculture and mining but also large mining enterprises and artisanal miners. Members of many African families have moved from agriculture into micro and small-scale



Denis Blight introduces the Sir John Crawford Memorial Address



Gavin Hilson in Africa

Bread from Stones?

The Crawford Fund 2013 Annual Conference, August 2013

mining, as was reported by Prof Gavin Hilson, University of Surrey.

Enlightened self-interest on the part of miners can take many forms: strict adherence to the terms and conditions attaching to mining leases; ensuring that employees and their families have adequate nutritious food – either because of government policy and practice or through specific procurement and investment interventions by the companies themselves; and building harmonious relationships with communities in the neighbourhood of mines and beyond.

The market afforded by demand for food and fibre generated by mining can form the core for the growth of new industries in rural communities provided these industries can deliver the quality and quantity of produce required. Out-grower arrangements between large mining companies and smallholder farmers organised into associations is one approach that might have broader application.

Delegates were shown positive examples where Australian mining companies in Africa support corporate social



The Closing Panel Session at "Bread from Stones"

responsibility projects in agriculture. We also heard about, and discussed, the existence of tension between corporate responsibilities for profitable investments and broader government and community relationships. Peter Sullivan, Chief Executive Officer of Resolute Mining Limited, told the Conference that there was 'no single recipe' for making bread from stones - each mine's life is limited; companies are neither charities nor an arm of government.

"There was talk at the forum about demand from mining creating new markets for agriculture which can then be used as a base for further development

but no studies show how it can happen beyond the mine boundaries. There is clear potential for that," Dr Blight said.

The conference was a first step towards purposeful discussion on potential synergies between two strong economic drivers — agriculture and mining — in Africa and elsewhere. A vital conversation on policy and practice has begun and we look forward to an initial meeting in January with the Australia-Africa Mining Industry Group on shared interests and ambitions in the pursuit of driving positive outcomes from this first step.

Training Impact

Mark Drew, the Australian who heads the Khyber Pakhtunkhwa Agricultural Development Organisation (AKPADO) has been to the Swat Valley in Pakistan a number of times assisting in the development of agriculture with the aim of improving the incomes of farmers in the region. Part of the process is educating farmers about fruit growing technologies and techniques.

AKPADO, which is based in Australia hosted three researchers from the Agricultural Research Institute (ARI) in Mingora in the the Swat Valley, a formerly Tabliban-occupied province, with the support of The Crawford Fund and Syngenta. A report on the training in our June "Highlights" noted a few of the issues faced by farmers include brown rot, blossom blight and fruit flies.

"The week that the researchers have spent in Australia has been enormously beneficial. From learning about the theory behind fruit fly treatment up at Griffith University in Brisbane through to talking to peach growers and agronomists down at Shepparton, the knowledge that they have gained from their time spent here has been invaluable."

Mr Drew reports that since the visit there has been trapping and identification work carried out in the region, demonstrating that there are at least three fruit fly species inhabiting peach orchards in Swat (*Bactrocera zonata*, *B.dorsalis*, *B.cucurbitae*), and possibly a fourth species (*B.invadens*). Further work has focused on field collection of peaches and laboratory raising of insects collected from this fruit to establish which species are infesting peaches in the field, and relative species density. Work is also being conducted to establish alternate host ranges for the different species found.

Mr Drew is in the process of working with Dr Mohammad Rauf, Director of ARI Mingora and one of the team that visited Australia, to establish a fruit fly working group in Pakistan to better tackle the problems caused by this major agricultural pest. Testing to ascertain whether there is resistance to commonly used insecticides is also something that Mr Drew is working on with local staff.

Dr Khalil ur Rehman, who also travelled to Australia, was very impressed with tree management techniques, especially the Tatura Trellis system of tree

architecture. On his return to Pakistan he has established a trial orchard at the ARI using the Tatura trellis system, and this will be compared with the current pruning and tree architecture systems used in Swat.

And the third trainee, Shahid Muhammad has conducted a number of spray trials for brown rot control using DMI chemistry and has demonstrated an increase in control from this switch.

"All in all I believe that good progress is being made to improve the productivity of peach growers in Swat. The Crawford Fund can be assured that the funding provided is delivering real benefits to the farmers of Swat through capacity building at ARI Mingora," Mr Drew said.



MAKING THE PUBLIC AWARE

Our public awareness campaign will have the benefit of a communications and admin assistant in 2014, enabling some additional events and activities, and improvements to our website and social media presence. We will also be moving to the use of more regular electronic reporting. You can keep up-to-date with our regular feature stories and news reports on our website, through our @CrawfordFund Twitter site and videos on our YouTube site. Key activities since the last newsletter are highlighted below.

Task force on Australian benefits from international ag research

Our Task Force on benefits to Australia from international agricultural research is our lead report in this newsletter and will be the focus of a major advocacy and media effort in the coming months. Preliminary meetings, including with Foreign Affairs Minister Julie Bishop, around the findings of the work have been very positive. Our review of ACIAR's bilateral research program (about 70% of its budget) found that the rate of return on investment by ACIAR and its Australian and developing country partners greatly exceeds total investment in bilateral research since ACIAR's inception 31 years ago. Check out the personal testimonies provided in videos on our YouTube site.

Mining and agriculture attracts strong media interest

The international development dimensions of the mining and agriculture sectors attracted strong media interest for our 2013 conference "Bread From Stones?" held in Perth in August and reported elsewhere in the newsletter. Key print and TV news reports focused on statements by the Director at the OECD Development Centre Mario Pezzini, highlighting the role of agriculture and mining in improving wealth and the risks those sectors face. In his interview with Geraldine Doogue on Radio National's Saturday Extra program, HE Festus Mogae, former President of Botswana, reported on strategies his country used to ensure that the people benefited from their mining boom. In a range of profile interviews, Minister Florence Chenoweth from Liberia discussed her personal struggle to escape her war-torn homeland and what she's been able to achieve in the position of Minister for Agriculture since her return to the now peaceful country.



The Hon Florence Chenoweth being interviewed on ABC

Grasslands for food security

As noted in a separate report, the Fund supported the 22nd International Grasslands Congress through training opportunities for some delegates from developing countries and through a media outreach for the event that resulted in national media coverage of the important role that the grasslands play in food security. In national media coverage of

the keynote address by Dr Jimmy Smith, Director General of the International Livestock Research Institute argued that the world's small-scale farmers and livestock keepers, both relatively neglected in global food security discussions and agenda till now, can be a large part of the solution, rather than a problem, to feeding the world sustainably to 2050. Dr Smith presented an overview of the global food security challenge and argued that smallholder animal agriculture is key to addressing it.



Nobel Peace Prize laureates: Charles W. Rice and Jean-Francois Soussana at the Fund's stand at IGC

World Vegetable Centre – 40 years on

Cathy Reade attended the celebrations of the World Vegetable Centre's 40th Anniversary at their headquarters in Taiwan as a guest of the Centre, and was involved in a panel at the colloquium. She discussed the Fund's work and raised the importance of communicating research results and impact with stakeholders. The colloquium included Nobel Laureate Yuan Tseh Lee talking on Food Security in a Low Carbon World.



Cathy Reade addressing the 40th Anniversary Colloquium at AVRDC

Seeing is believing – Peru and Cambodia

Caddie Brain from ABC radio and Jacinta Rose from Fairfax Regional Media both visited Peru in November and are currently reporting on the work of the International Potato

MAKING THE PUBLIC AWARE

Centre and the Cusco Potato Park. The social media communication during their visit provided lots of food for thought and wonderful photos. The trip was supported by the DFAT Council on Australia Latin America Relations, with a visit to CIMMYT to come in the months ahead. We are now starting to see the results of the visit, including a 25min documentary on Radio National.

Documentary maker Sally Ingleton visited Cambodia with Cathy Reade in November and will be developing short videos on a range of ACIAR projects, as well as interviews with Crawford Fund trainees.

Another comms master class

Evaluations from participants in our Master Class in Communicating with Stakeholders, held in Africa earlier in the year, have indicated that there's been some great activities

underway. As one participant reported on the benefit of the final communication strategy "All in all, I felt more confident and a bit more in charge because I had a definite plan to work with." Plans are underway for a third Master Class, this time for researchers in the Pacific. The interest in the Master Class is likely to see it offered again later in 2014.

State based events

A priority for development in 2014 will be additional public awareness events at a State level, incorporating some co-badged events with key stakeholders as well as outreach at a State level around the task force report noted previously in this newsletter. Our first event will see the NSW Committee partnering with the University of Sydney and others for an event to highlight NSW institutions' international efforts around food security.

Recognition of a Lifetime Contribution CAPACITY BUILDING AND FOOD SECURITY

Professor Emeritus Robert (Bob) Gilkes, former Winthrop Professor of Soil Science and Adjunct Senior Lecturer, School of Earth and Environment at the University of Western Australia was recently presented with a Crawford Fund medal for his lifetime contribution to research supervision and mentoring of overseas students. Over 60 people attended the presentation.

Prof Gilkes is a soil scientist with an international reputation in his field and has worked in areas covering soil mineralogy, fertiliser chemistry, mine site rehabilitation and management of soil, water and other resources.

Since joining UWA in 1969, Bob has supervised 150 honours students and 66 PhD and Masters students. Of the postgraduates, 39 have been overseas students, and he has supervised a further 20 postgraduates based in Thailand, Iraq and Brazil.

"The Crawford Fund's training program

has been successful because of trainees and trainers who are seeking to make an enduring contribution to global food security. Many go unnoticed and their contributions unheralded," said Dr Denis Blight, Chief Executive of the Crawford Fund, who travelled from Canberra to present Bob with the award.

"Bob's contribution to building capacity in developing countries for food security has been tremendous, and the Crawford Fund has been lucky to have Bob involved in four of our training programs covering important issues such as the production of biochar from agricultural waste and identifying constraints to fertility in tropical soils."

Professor Jen McComb, coordinator of the Crawford Fund WA Committee, noted "Bob's supervision is highly regarded by his students and he keeps in touch with past students, taking an interest in their careers and mentoring their progress."

"Students have been attracted by this high quality research, and his reputation as a wonderfully supportive supervisor," she said.

Reflecting the international standing he has, Bob is an Honorary Professor at Huazhong University in China and an Adjunct Professor at Kasetsart University Thailand.

At the award presentation, the three Western Australian students who attended the Crawford Fund's annual conference, held in Perth in late August, spoke on their experiences at the conference.

"It was quite fitting that Bob got to hear our Young Crawford Scholars speak, as the topic of our annual conference 'Mining, Agriculture and Development: Bread from Stones' – is closely related to some areas of Bob's research such as mine rehabilitation," concluded Jen.



Bob Gilkes in the field



Terry Enright, Chair of the WA committee, with Crawford Fund Medal awardee Bob Gilkes

Reports follow on a selection of training programs that we have supported for groups and individual men and women engaged in agricultural research in developing countries, and in Australia. The back cover of the newsletter has a listing of planned training.

We are very grateful to the State program committees whose members volunteer their time and knowledge and use their networks to bring together the Australian talent to match developing country training needs.

Indicative of the range of issues challenging developing country agriculture, it is interesting to note that the topics covered in the training reported below include poultry production for food and nutrition security; international frost research; mango management; pig nutrition; crop disease diagnostics; ecological rodent management; sustainable aquaculture; taxonomy of mango gall midges; early detection of plant pathogens; supply chain; nitrogen fixation in grain legumes, and landcare principles.

And the range of countries represented by trainees includes Timor-Leste, Vietnam, Laos, Argentina, Azerbaijan, Bangladesh, Burkina Faso, Kenya, India, Iraq, Pakistan, Papua New Guinea, Sudan, Indonesia, Fiji and Tanzania.

MASTER CLASS UPDATE

Master Class on adaptation to drought

Drought is one of the biggest threats facing agriculture today. In August, the Crawford Fund sponsored a Master Class on "Adaptation to Drought", which took place in Perth prior to the InterDrought Conference - a major international platform to debate strategies to increase yield and stability of crops under drought conditions. It provided our Master Class with access to the world's leading experts in the field.

The Master Class, organised by Prof Willie Erskine at the University of WA, aimed to increase participants' understanding of practical selection for drought tolerance (Phenotyping), new techniques for drought selection (Genotyping), and crop management options to cope with drought.

All of the 19 participants were experienced drought scientists from a wide range of different developing countries including Argentina, Azerbaijan, Bangladesh, Burkina Faso, Kenya, India, Iraq, Pakistan, Sudan, and Tanzania - together with six Australians. Twenty-one percent of participants were female.

The Master Class included a tour through the Wheat Belt of WA with visits to the WA No-Till Farmers Association trials, a primary plant breeding site and a new varieties trial site, as well as experimental hands-on practical phenotyping for drought and involvement in molecular technologies applicable to selection for drought.

In addition to the Crawford Fund, co-sponsors of the Master Class were the Australian Centre for International Agricultural Research, Grains Research and Development Corporation, and the UN FAO which supported airfares for overseas participants.



Vincent Vadez from ICRISAT explains canopy light interception

2014 Master Class plans

Three of the master classes planned for 2014 include:

- Communicating with Stakeholders, to be held for Pacific region researchers in Nadi
- Agribusiness Research Methods to be held in Vietnam in March
- Management of sea cucumber fisheries in the Asia-Pacific Region to be held in Malaysia in November.

STATE TRAINING PROGRAMS

NORTHERN TERRITORY

Poultry for food and nutrition security in Timor-Leste

Timor-Leste has the highest stunting rate in children in the world. Stunting affects health, physical and cognitive development capacity in children as well as productivity in adulthood. Consequently improving childhood nutrition is a national priority.

Associate Professor Robyn Alders from the University of Sydney visited

Dili, Timor-Leste this year to identify opportunities for working to address nutrition through improved poultry production.

The visit was hosted by Dr Antonino do Karmo, Head of the Department of Animal Health, and supported by the Crawford Fund.

The program seeks to contribute to improved food security, childhood nutrition and income generation and will be implemented by the Ministry of Agriculture and Fisheries (MAF) in collaboration with the Ministry of Health (MoH), the Ministry of Commerce, Industry and the Environment and the Department of Self Employment at SEFOPPE.

Some of the main aims will be to control Newcastle Disease in village chickens and to improve village chicken husbandry and management strategies including marketing.



Robyn Alders at work in Africa

ACT

Extension practices research in Asia

Effective in-country engagement between research and extension staff and farmers is critical to the successful establishment and monitoring of on-farm demonstration trials of new techniques.

In order to provide key staff in an ACIAR project with examples of extension practices here and to broaden their knowledge and awareness of simple crop management tools, the Crawford Fund sponsored a visit by Mr Sipaseuth, Mr Khammone Thiravong and Mr Pasalath Khounsy from Lao PDR, Dr Minea Mao and Mr Tom Say from Cambodia and Ms Bhagya Laxmi from India to participate in a training course in Australia.

In the first week participants were exposed to three private extension agencies through on-farm visits in the Burdekin and on the Darling Downs, and to government extension and support for emerging primary industries. They also learned about methods of participatory action research and were introduced to the value of simulation modeling at the CSIRO.

In the second week of the training, course participants engaged with state government and non-profit extension agencies. They visited dryland Mallee farms in both South Australia and Victoria and engaged with farmers to learn about the challenges of marginal Australian environments.

Cambodian-based Dr Minea Mao reported "The knowledge and experiences which I gained from my two week training course in Australia will help me to promote and improve agricultural extension systems in my country. I am going to share my experiences and knowledge to my colleges in order to strengthen their capacity and effectiveness."

Pursuing a passion for Ag4Dev

With little life, or indeed scientific, experience you might ask yourself how an early career researcher could benefit from spending three weeks at a huge institution which is responsible for undertaking world changing agricultural research. That's exactly what David Gale wondered before his trip to the International Rice Research Institute (IRRI), supported by the Crawford Fund and the Graham Centre.

David got to attend the 2013 IRRI "Rice: Research to Production" course, following in the muddy foot prints of Ray Cowley in 2009 and Nicola Wunderlich in 2012. David was also a former Crawford Fund conference scholar.

The three-week program covered in detail topics such as the basics of rice production in Asia; the germplasm collection at IRRI and current issues related to its exchange, and intellectual property and research issues experienced by IRRI and its partners.

On returning to Australia, Mr Gale reported to the Crawford Fund that he entered the course expecting to gain knowledge about research in rice production systems but came out understanding this process "because someone didn't just talk about it, they let me try it for myself".

"Whether it be transplanting rice by hand, selecting individuals for use as parents in breeding a new line, emasculating flowers (as shown in the photo with this story) and artificially pollinating, or interviewing farmers about their production decisions and practices, I was able to participate in the whole process."



David Gale in the fields of IRRI

WA

Frost research goes global

International collaboration in frost research has begun, following a Crawford Fund-sponsored visit by an Argentinean researcher to Australia. Hosted by the Department of Agriculture and Food in Western Australia (DAFWA), Masters student Diana Martino from Argentina's National University of Mar del Plata, worked on research trials located in various parts of Australia.

The three-month visit enabled Ms

Martino to learn the latest techniques in reproductive frost field phenotyping prior to starting her PhD in this area in Argentina.

She participated in research as part of the Australian National Frost Program set up by the Grains Research and Development Corporation (GRDC) in collaboration with DAFWA and the University of Adelaide.

Department research officer Ben Biddulph, who supervised Diana's work during her stay, said there was little research carried out internationally on reproductive frost damage due to the complexity of the frosting environment.

"Currently, only Australia is carrying out targeted field screening of wheat for frost susceptibility. The collaboration with Argentina will help stimulate international research capacity in frost screening, which could speed the development of frost-tolerant varieties," Mr Biddulph said.

"Diana will now take our frost screening methods and ideas back to Argentina where they will be eagerly tested and adapted by breeders and plant physiologists working for Argentina's National Institute of Agriculture (INTA)," he said.

The visit provided a strong case for the future development of international collaboration in reproductive frost research and the development of more resilient grain production systems.

Decision-making for mangosteens

There are considerable differences between the Australian and Indonesian agricultural sector, yet decision making at business and project level requires the same skill set of knowing what to use, when to use it, and whether relevant output is created.

In order to empower decision makers within the Indonesian mangosteen industry, two Indonesian public servants attended a week-long workshop in Kununurra run by the Department of Agriculture and Food Western Australia's Regional Economist, Francis Bright with the support of the Crawford Fund.

The workshop provided them with knowledge of different decision support tools, information about when to use the tools, and how to interpret the results. The training allowed the two students to undertake a case study where a local grower wanted to know the economic payoffs of changing between two crops.

Both students said the knowledge gained during the workshop will assist the industry in Indonesia. Particularly helpful were the decision support tools and adult learning principles, which are set to improve the adoption of new technologies.



Maulita, Tara and Intan at the beginning of the Goomig development (Stage 2 of the Ord River Irrigation Area)

Management of mangoes

What's the best way to manage mangoes pre and postharvest in terms of preparing them for sea freight? That question was explored at a training event supported by the Crawford Fund, held in Java, Indonesia.

The 43 participants were selected due to their various roles within the Indonesian mango industry. The group included leaders from farmer groups over most of the major mango districts in East, West and Central Java, leading researchers, extension officers, exporters and other key stakeholders in the mango export chain.

Hands-on activities were incorporated into various sessions in order to expose participants to the workshop processes and provide them with ideas that they could use with regional grower groups and supply chains.

The training has resulted in improved dissemination and adoption of research and information outputs from current mango research and stronger linkages between the various research and extension groups working in mangoes in Indonesia.

NSW

Pig nutrition in Laos

An increasing number of farmers in the North of Laos are moving away from

traditional ways of keeping pigs to market-oriented systems in order to meet growing demand for pork meat. The problem they face is slow animal growth due to the poor quality of feeds. In order to help farmers improve productivity, the Crawford Fund sponsored a pig nutrition and management training course.

The course was facilitated by Dr Joanne Millar, Senior Lecturer from the School of Environmental Sciences at Charles Sturt University and Dr Phonpaseuth Phengsavanh from NAFRI in Vientiane, Lao PDR. It was held in Luangphabang and attended by 19 extension officers, three livestock researchers, two extension researchers and one farmer.

During the course, researchers from Livestock Research Center (LRC) presented new outcomes of research on local pig nutrient requirements and nutrition, and ways to improve smallholder pig production. Participants looked at different local available feeds and separated them into energy and protein sources. They also practiced feed formulation for pigs in different growth stages in order to understand that nutrient requirements can vary from animal to animal.

Extension specialists facilitated a discussion on the best methods for working with farmers, and how to evaluate production and livelihood impacts from practice change.



The class underway in Vientiane

Crop disease diagnostics

The Crawford Fund's support through a capacity building program in crop disease diagnostics, Integrated Disease Management (IDM) and quarantine issues in the Lao PDR is ongoing. As part of this effort, an intensive training course was held between 12 August – 5 September involving 16 participants from various divisions of the Department of Agriculture and Forestry (PAFO) as well as agriculture college staff and final year university students.

The training included regular disease surveys and interactions with farmers, followed by laboratory work focused on diagnostic process and interactive tutorials. Two formal one-day workshops were also presented. The first, under the guidance of Dr Len Tesorieo, included presentations on diseases that have been observed on common vegetable crops grown in Champasak province. It included an overview of all major diseases of head cabbages. He also discussed important exotic diseases that have yet to be observed in the province or elsewhere in Lao.

The second workshop was presented by Professor Lester Burgess and Dr Kylie Ireland on the final day of the training program and included a summary of findings, a detailed discussion on IDM strategies for vegetable production in polyhouses and field-grown cabbages.

The Australian scientists are now considering topics for future intensive training courses including vegetable seedling production and an introduction to fungicides. They are also exploring the possibility of preparing a 'First reports of diseases in Lao PRD' paper for publication.

SOUTH AUSTRALIA

Nitrogen fixation in grain legumes

Argentinean scientist Guillermo Adrián Divito was given the opportunity to travel to Australia in July to work with Associate Professor Victor Sandras from the South Australian Research & Development Institute (SARDI) on methods to assess nitrogen fixation in field-growth grain legumes.

SARDI is currently engaged in major projects on pulse pre-breeding and agronomy, funded by GRDC, SAGIT and Australia-India Research Fund – with a primary interest in pulse adaptation to heat and water stress. Given the importance of nitrogen nutrition to stress tolerance, Mr Divito's insights proved to be timely and relevant.

In addition, a joint publication has been produced that consolidates the working link between SARDI and the University of Mar del Plata in Argentina, where Mr Divito is a PhD candidate. The paper, titled "How do phosphorus, potassium and sulphur affect plant growth and symbiotic nitrogen fixation in crop and pasture legumes? A meta-analysis", has been submitted for publication to an international journal.



Mr Divito checking field growth of legumes

"The training has allowed me to develop higher-level skills in the scientific process of literature review, gain a better understanding in the use of statistical tools for the analysis of a wide data set from the scientific literature and expand my personal and scientific perspectives through interacting with the broader academic and scientific community," Mr Divito said.

Targeting arsenic contamination

The problem of water contamination in India has reached alarming proportions since arsenic was first discovered in groundwater in June 2002. More than 18 districts have been affected and the contamination has led to serious health problems amongst the population.

Mr Manoj Kumar is a PhD student at the School of Environmental Sciences in Jawaharlal Nehru University, New Delhi. The Crawford Fund supported Mr Kumar to travel to Australia with samples from four arsenic-affected districts Ballia



Operation and maintenance of the ICP-MS at CERAR laboratory



The trainees complete their aquaculture course

(Uttar Pradesh) and Buxar, Bhojpur and Samastipur (Bihar) (see map) and undergo four months of training at the Centre for Environmental Risk Assessment and Remediation (CERAR), University of South Australia under the guidance of Dr Mohammad Mahmudur Rahman and Professor Ravi Naidu. The training focused on the analysis of arsenic and other elements in various environmental samples using advanced analytical techniques.

During his stay in CERAR, he gained experience in the sampling, preparation and analysis of environmental samples including water, soil, biologic samples and plant materials for the determination of arsenic and other contaminants. He received training on various advanced analytical instruments such as inductively coupled plasma mass spectrometry (ICPMS), inductively coupled plasma optical emission spectrometry (ICPOES), Hi-Performance Liquid Chromatography (HPLC)-ICPMS used for the analysis of arsenic and arsenic compounds in environmental samples.

He also received training on different digestion procedures for the analysis of arsenic and other trace elements in soil and plants and used sophisticated instruments for this purpose.

The training has allowed him to further educate the local population about the level of arsenic in various environmental samples and has opened up new options for research in the area.

Other training program outcomes include the development of a network of genetic researchers distributed across research institutions, universities and government agencies in Vietnam. In particular, the program has enabled lecturers

from the participating universities to develop quantitative genetics courses for undergraduate and postgraduate students at their respective institutions throughout the country.

QUEENSLAND

Sustainable aquaculture

Aquaculture is an important economic activity in many countries but there is a need to develop more sustainable practices in order to secure the industry's future. To address this issue, the Crawford Fund sponsored University of the Sunshine Coast staff Dr Nguyen Hong Nguyen, Prof Abigail Elizur and Associate Prof Wayne Knibb to conduct a training workshop in "Reproductive and Genetic Technologies to Promote Sustainable Aquaculture" in Hanoi, Vietnam.

The training included 24 participants from seven different aquaculture research centers and departments in Vietnam.

Focusing on advanced reproductive and genetic technologies for aquatic animal species in Vietnam, the course received positive feedback from all participants.

"This successful event enhanced the training and capacity of local staff to implement genetic improvement programs for important farmed aquaculture species such as tiger prawn, white leg shrimp, striped catfish and barramundi. It also provided opportunities for USC staff and participants to exchange practical experience in order to identify research priority areas for future expansion of the collaborative program," said Dr Nguyen Hong Nguyen.

Ecological rodent management

Rodents have an impact on virtually every sector of agriculture from the health of the labour force to the production and storage of staple foods such as taro in communities across Fiji. Leptospirosis, a rodent-borne disease, is a significant cause of mortality in agricultural communities.

The Crawford Fund supported training in ecologically-based rodent management practices at the University of the South Pacific (USP) in Fiji. The training was facilitated by Dr Grant Singleton from the International Rice Research Institute and included an open seminar for more than 40 people from USP and government institutions, as well as a smaller facilitated workshop for 25 participants who were guided through a series of formative exercises to consider issues related to rodents in agricultural, peri-urban and urban settings.

The groups each conducted a decision analysis of current management practices and attitudes, which enabled participants to identify a broad range of key issues. They included cultural values related to rodents, the lack of information on rodent ecology and their role in disease and agricultural losses in Fiji, and the need for a cross-sectoral structure to enable the implementation of more systematic rodent management programs.

The Environmental Health Unit in the Ministry of Health in Fiji intends to use information from the workshop to develop more informed programs for rodent management across the country.

Early detection of plant pathogens

Educating researchers in Asia about early detection and correct identification of rust fungi is not only beneficial for countries like Vietnam, but also Australia – as it facilitates the pest risk analysis process for agricultural imports and provides early warning of new and emerging plant diseases in the region.

In August, Ms Tran Yen Chi, a plant pathologist from the Vietnamese Plant Protection Department visited Australia with the support of the Crawford Fund.

Based in the state-of-the-art microbiology and molecular laboratories at the Ecosciences Precinct in Dutton Park, Queensland, Ms Chi worked under the guidance of mycologist Dr Roger Shivas from the Department of Agriculture,

Fisheries and Forestry, Queensland. During Ms Chi's visit she learnt molecular and morphological diagnostic techniques to identify plant pathogens – in particular, rust fungi.

Ms Chi had also visited Australia back in 2011 with help from the Crawford Fund in order to participate in a survey of rust fungi in northern Australia and attend the Australasian Plant Pathology Conference in Darwin. During her latest visit she was able to complete a manuscript listing several new records of rust fungi that she had collected in Vietnam.

"A highlight of my visit was an invitation to attend the Awards Day at the 2013 Hermitage Research Facility Schools Plant Science Competition. With support from Dr Shivas, I made a brief presentation on "Finding the fun in fungi: our work as plant pathologists in Australia and Vietnam". I hope to return to Australia to study for my PhD, working with rust fungi," Ms Chi said.



Ms Chi with Crawford Fund Queensland Coordinator, Dr Kep Coughlan

The taxonomy of mango gall midges

Gall midges are a major problem for the production of mangoes throughout the world. There are numerous species of gall midge that attack mango, yet little is understood of their taxonomy and a number of species have never been formally identified and described.

The Crawford Fund recently sponsored Pakistani and Filipino scientists to travel to Australia to attend a conference and gall midge workshop. Dr Shafqat Saeed, Mr Muhammad Rizwan (Pakistan) and Dr Celia Medina (Philippines) attended "The 6th International Symposium on the Biology and Ecology of Galling Arthropods" in Queensland. During this conference they participated in a

workshop on the taxonomy and biology of mango gall midges, which was run by Dr Peter Kolesic, a gall fly taxonomist. With the help of Dr Kolesic, previously unidentified species from Pakistan and the Philippines were identified.

"The learning that I acquired could be extended to how I will approach other pest problems associated with gall-formers in the future - the galls as extension of the phenotype of the organism, the role of inquilines in the ecology of gall formers and the variation in response of plants to gall forming organisms," said Dr Celia Medina from the University of the Philippines Los Banos.

Dr Shafqat Saeed from Bahauddin Zakariya University Multan Pakistan said the workshop was a great opportunity to learn the techniques of gall midge taxonomy for the identification of different species of mango gall midges.

"After attending training workshop, I was able to prepare slides of different body parts of midges for identification".

VICTORIA

Spreading Landcare in Africa

Landcare is well-known in Australia as a successful community-based approach that has played a major role in raising awareness, influencing farming and land management practices and delivering environmental outcomes across Australian landscapes.

The Fund has supported a range of training efforts over the years to spread the benefit of Landcare to developing countries.

In July 2013, Landcare representatives from across Southern Africa converged on Lilongwe, Malawi to participate in a training workshop organised through the African Landcare Network, providing a platform to support and enhance the expansion of the Landcare model across Southern Africa.

The training assisted representatives from across Southern Africa work towards building or creating a Landcare program within their respective countries, including Lesotho, Malawi, Namibia, South Africa, Swaziland, Zambia and Zimbabwe – and was facilitated by a training team from Australia, sponsored by the Crawford Fund.

A range of topics were addressed, including: discussions on the principles of

CRAWFORD FUND TRAINING FOR IMPACT

Landcare; Landcare Groups as a model for extension; application to livelihood approaches; partnerships; and the monitoring and evaluation of Landcare programs.

The workshop featured a site visit to Salima District hosted by the NGO, Total Landcare, and the World Agroforestry Centre's Southern Africa team.

The workshop concluded with project participants developing a Landcare action plan to implement in their respective countries and to support each other in their endeavors through the network.

TASMANIA

PNG supply and value chain analysis

In order to take a closer look at technology supply chain issues, the Crawford Fund sponsored Research Scientist Enopa Lindsay from the National Agricultural Research Institute at the Highlands Regional Centre in PNG to attend three-months of intensive training at the University of Tasmania.

The visit involved a value and supply chain analysis of technology conceptualisation, generation and transfer between research providers and agricultural producers in Papua New Guinea. The aim was to assess and better understand the current limitations to technology dissemination between agricultural research providers, development organisations, and the 'consumers' of their product.

"Identifying the value components of the RD&E supply chain has allowed Enopa to work on a strategic framework, with incentives derived from a true understanding of where true value to the consumer is generated," said Dr Mark Boersma from the Tasmanian Institute of Agriculture.

"We feel that the training has equipped Enopa with higher level skills and abilities in critical thinking, critical analysis, strategic policy, value chain analysis and agricultural technologies."

Mr Lindsay hopes the preliminary training will lead into a Masters by Research program.

"I would like to thank the Crawford Fund for having confidence in me by awarding the training award. The training was highly relevant, useful and beneficial for my career development as well as the agriculture industry in my home country and I highly appreciate your funding support," Mr Lindsay said.

The importance of well-written papers

Communication of research findings in peer-reviewed journals is the standard by which scientists and their findings are evaluated by their peers. Publication in international journals ensures that research findings are accessible to the scientific community for use in related studies, which can lead to agricultural and forestry improvements around the world.

A Scientific Paper Writing Workshop was held at Vietnam's Hue University

of Agriculture and Forestry (HUAF) in central Vietnam in late October. The workshop was made possible by a partnership between the University of Tasmania (UTAS) and HUAF, along with support from the CSIRO and the Crawford Fund.

Twenty-seven participants, 11 from HUAF and 16 from other institutions completed the course. They consisted of lecturers, research scientists and postgraduates, from a range of disciplines including agriculture, forestry and conservation. There were 11 females and 16 males.

Participants were taught about the importance of identifying the issue, the methods to be used, their validation, and the implications and applications of the findings. They also learned about how to create dot point outlines in order to establish logic and flow within their papers; the selection of a target journal, and correct use of figures and tables, introduction and conclusions, and abstract and title in a scientific paper.



Hard at work at Scientific Writing workshop

Buckets of gratitude for Sallyanne Atkinson

The Crawford Fund Board and Queensland Committee have both celebrated the contribution and hard work of Sallyanne Atkinson as Board Member and Queensland Committee chairperson as she advised of her plans to retire from both positions. We are pleased to note that the Queensland Committee will continue to benefit from Sallyanne's involvement at a State level.

Sallyanne, who has been in special trade representative roles for the State of Queensland and the former Lord Mayor of Brisbane, was able to bring to both positions with the Fund her vast experience and networks as a leader in business, government, politics, management, arts and the community.

Professor Kay Basford, President of the Academic Board of the School of Agriculture and Food Sciences at the University of Queensland and member of the Board of the International Rice Research Institute, will move from her position as a member of the Queensland Committee to being a member of the Crawford Fund Board and chair of the Queensland Committee.



Sallyanne Atkinson (l) and Kay Basford at a farewell lunch with the Queensland Committee

The 22ND International Grassland Congress

In the past, the Crawford Fund has supported a range of international fora which have food security issues as a key focus. One such event was this year's International Grasslands Congress in Sydney.

The greying of grassland scientists is an international problem that threatens the future of grasslands and the industries and people they support. The average age of grassland scientists is increasing and many are expected to retire over the next decade. In addition, the lack of investment in grassland research internationally has restricted the number of grassland scientists entering the profession and may decrease our capacity to deal with emerging challenges of a changing climate, food security and human induced degradation, if something is not done soon.

The 2013 International Grassland Congress (IGC) focused on building the capacity of young grassland scientists to facilitate the transfer of knowledge and expertise from the soon to be retired to the up and coming. It was a landmark event – attended by approximately 800 delegates from 63 countries, including 200 Early-Career Researchers (ECRs). There were almost 700 scientific papers and more than 200 spoken presentations.

The Crawford Fund supported the IGC through both training and media activities.

On the training side, 23 delegates from developing countries were supported to attend training activities delivered through pre and post-Congress tours and other activities.

The main benefit delivered to each trainee was a new, global network of peer researchers including well-established Australian scientists. Two of the trainees are now exploring opportunities to undertake PhD studies in Australia. One is negotiating a post-doctoral placement. One is seeking to be linked to an existing ACIAR project. Several have indicated that they will seek funds for ongoing collaboration with Australian research groups.

In order to help raise public awareness of the event, the Crawford Fund's Cathy Reade provided media management before and during the conference. There



Dr Jimmy Smith, keynote speaker and focus for media attention on food security during the Grasslands Congress

were more than 60 primary media 'hits', and these were picked up and repeated in radio and newspaper chains.

Highlights were two TV interviews on ABC TV by Jimmy Smith from the International Livestock Research Institute talking about the challenges of meeting future demand for livestock products; and Jean-Francois Soussana, INRA, France, and a Nobel Prize winner talking about managing grasslands in a changing climate. These two plenary speakers were also heavily involved in radio interviews. There were dozens of radio presentations, especially on ABC programs including Radio National Breakfast, RN Bush Telegraph, Radio Australia News, RA Mornings, RA Pacific Beat, RA Asia Pacific, RA Indonesia,

ABC National Rural, ABC Country Hour, ABC Rural Tasmania, ABC 666 Canberra, ABC 774 Melbourne, 3AW Melbourne and many regional stations. Printed items were predominantly in the Rural Press and online news providers. One notable report appeared in the prestigious scientific journal Nature, describing CIAT's work on Biological Nitrification Inhibition by *Brachiaria* grasses.

The Fund welcomes these opportunities to be associated with prestigious international events that provide a platform for training and public awareness related to key food security issues.

CONTRIBUTORS FINANCIAL YEAR 2012-13

We wish to thank the following contributors to our training and public awareness activities:

African Studies Association of Australasia and the Pacific
Alliance for a Green Revolution in Africa AusAID
Australian Academy of Technological Sciences & Engineering
Australian Agricultural and Resource Economics Society
Australian Centre for International Agricultural Research
ACIAR - Australian International Food Security Centre
AVRDC - The World Vegetable Center
BECA - Engineering Consultancy in Australia, New Zealand and Asia
CAB International
CSIRO Sustainable Agriculture
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DONATIONS CAN BE ADDRESSED TO:

The Chairman
The Crawford Fund
PO Box 4477
Kingston ACT 2604

The Crawford Fund Board of Directors

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Customer focussed plant variety design

Agriculture in Africa is at a tipping point, as farmers move from subsistence systems and small scale producers aim to generate surpluses of products to sell in local, regional and/or international export markets. Enabling small scale producers to access the expanding markets is one of the critical challenges facing policy makers.

Central to the transformation of agriculture in Africa is identifying market demand and developing products with suitable characteristics to meet market requirements. Such demand can originate from producers, processors, and/or consumers. A more customer focussed approach to plant varietal design will impinge on public and private sector plant breeding programs. Decisions on determining the preferred traits for which to breed new varieties are paramount for success.

Private sector companies have considerable experience worldwide in developing crop varieties that fit the needs of customers. This experience in plant variety design can add value to public as well as private sector breeding programs in emerging economies. As economies mature and markets expand, it can be expected that the private companies will also become increasingly involved in breeding new high performing varieties to meet customer requirements and market demand in emerging economies.

This issue of customer focussed plant variety design is being explored by the Crawford Fund in conjunction with the Syngenta Foundation for Sustainable Agriculture and several other partners in Africa and Australia, as part of the Crawford Fund's study of emerging issues in global food security.

**For further information, contact the study leader,
Dr Gabrielle Persley at g.persley@doylefoundation.org**

What is the Crawford Fund?

The Crawford Fund's purpose is to encourage investment in international agricultural research (IAR) by governments and the private sector, in the belief that it is an essential, high priority, international activity.

We believe that IAR holds the key to alleviating rural poverty in developing countries, and can thus open the door to economic progress. Good news is worth sharing, and the Fund's Public Awareness Campaign increases understanding of the importance and potential of IAR, its achievements and needs.

The Fund also has a training program that fills a niche by offering practical, highly focused non-degree instruction to men and women engaged in agricultural research and management in developing countries.

HIGHLIGHTS is the Crawford Fund newsletter. Letters from readers are welcome and should be sent to the editor, Cathy Reade at cathy.reamde@crawfordfund.org

Highlights and other publications and materials are on our website:

www.crawfordfund.org

CONTACT THE CRAWFORD FUND

For further information contact:

The Crawford Fund
Mail: PO Box 4477

Kingston ACT 2604

Office: Level 3

10 National Circuit

Barton ACT 2600

P: 61 2 6188 4370

E: Crawford@crawfordfund.org

www.crawfordfund.org

ABN: 86 141 714 490



THE CRAWFORD FUND
For a Food Secure World

Awards and Training Courses supported by The Crawford Fund

The following awards to individuals and courses for groups will be reported in future newsletters:

Training awards to individuals:

Abdool- Wadood Moomen - Ghana
- Development of multi-objective spatial suitability model: mining regions in focus

Dr Naeem Ahmad - Pakistan - Rice breeding - varietal and quality improvement

Herve Aholoukpe - Benin - Workshop on sustainable management of soil in oil palm plantations

Kavery Yogarayah - Sri Lanka - Skills development in genomic approaches for taxonomic identification of fungal plant pathogens

Mr Kristianus Hale Berek - West Timor - Integrated catchment management for increased agricultural productivity in West Timor

Mr Md Harunur Rashid - Bangladesh
- Reduction of Arsenic accumulation in vegetables

NGUYEN Xuan Ba - Vietnam - Building scientific capacity in analysis of data

Sirachai Arunrugstichai - Thailand - Elasmobranch identification and market sampling: specialist training

Sokchea An - Cambodia - Agri business planning, including scientific and economic analyses in agricultural production

Temma Carruthers-Taylor - to Vietnam - Honours Research Project: As and P in ground and surface waters

Training courses to groups:

Indonesia - Furniture design and the application of the design into finished furniture products - *Barbara Ozarska*

India, Malaysia, Brunei, Thailand - Fish pathology workshop - *Dr Susan Gibson-Kueh*

Indonesia - Mentoring workshop for scientific writing at University of Papua - *Joanne Wilson*

Burma, Laos and Cambodia - Assessment and quality control of beneficial microbes in Agriculture - *Lambert Brau*

PNG - The principles of soil and land assessment for erosion risk - *Peter McIntosh*

PNG - Social science methods for smallholder agricultural research: writing up qualitative and quantitative research for publication - *George Curry*

East Timor - protecting potato germplasm through seed certification - *Dr Nigel Crump*

PNG - Coffee marketing - *Peter Batt*

PNG - Scientific paper writing course - *David Parsons*

India - Acclimatisation to heat in sheep: measurements in thermal physiology - *Prof Shane Maloney*